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Original Communications.

REMARKS ON THE TREATMENT OF PARALYSIS AGITANS (PARKINSON'S DISEASE).

BY J. MADISON TAYLOR, A.M., M.D.,
Philadelphia.

I presented a paper on a successful method of relieving the more distressing symptoms of paralysis agitans, three years ago, before the American Neurological Society.[1] Since that time I have had much experience in employing this method, which consists of hygienic measures along with systematized movements, by which the tissues are made to regain their lost elasticity. I had hoped to offer the notes of these cases in the usual form and completeness, but so much difficulty has been encountered in keeping the patients under observation for a sufficient length of time, and persisting in the rather laborious and long-continued measures, that this is not feasible. It seems worth while, however, to give a résumé of my experience, which has been most satisfactory in the main, wherever and whenever the coöperation of the patient can be secured for a long enough period.

I was permitted to undertake the treatment of a number of cases, some seven or eight, at the Philadelphia Home for Incurables, by Dr. D. J. McCarthy. My difficulty with these cases consisted in

[1] *Journal of Nervous and Mental Diseases*, March, 1901.

the fact that the individuals were most of them of advanced years, some very old, and all had acquired that peculiar resignation or contentment which comes to the inmates of an institution where every comfort and luxury is provided, and no labor or effort is required of the sufferer, and if they recover they bid these comforts farewell. It was a matter of more discouragement than can be described to find that most of these folks could not be aroused to take personal interest in the measures for the relief of such distressing phenomena as are caused by this malady. Nevertheless it was true, and capable of utterly defeating my attempts for some of the more important and promising cases. In one, the youngest of the lot, the improvement was definite, and up to the present is fairly satisfactory. The difficulties in pursuing the treatment, which requires a skilled assistant and the helpful aid of the attendants, made the continuance of the measure almost impossible for one isolated case, the institution being far removed from the centers. An expensive expert could not be persuaded to give the amount of time necessary. Moreover, the regular institution attendants would not supplement the work. I had the untiring help of a third-year medical student, Mr. Benjamin Thomas, for as long as he could give it.

The cases which form the basis of my first paper were treated without medicine entirely, and abundant relief followed the measures about to be described. I have now had some severe cases under observation for several years. Those who were faithful to the treatment are satisfied with the results.

In Parkinson's disease there is usually to be found a pronounced degree of muscular weakness and constitutional depression accompanying the malady. This may possibly be dependent upon the pathological basis, or may be the result of the enforced disuse of the motor mechanism, through which cause the early degenerative changes gradually and steadily progress.

Some observers regard paralysis agitans as primarily a disease of the muscles (Gauthier). The changes in the cord described by recent writers are neither conspicuous nor definite, and are largely confined to scleroses of the vascular and perivascular tissues, chiefly of the smaller vessels, and are histologically similar to the ordinary senile processes occurring in the nervous system. Oppenheim says that to regard paralysis agitans as an exaggerated senile degeneration is of doubtful expediency.

I can learn little that is helpful or explanatory from the morbid anatomy of the disorder as recorded, nor is there much light shed by pathologists upon the means of possible relief. The histological changes would seem to show modifications of nutrition, due to the influence of some form of slow autointoxication. Recent observers report autopsies (Francesco Burzio, *Gaz. Heb.*), in one of which is shown a softened condition of the dura mater, which was adherent to the internal surface of the skull. The cord exhibited an atrophic sclerosis of the posterior columns, especially those of Burdach. In another case the posterior columns and pyramidal tracts were atrophied, as were also the cells of spinal ganglia, and there was a hyperplasia of the connective tissue of the ganglia. The alterations in the motor cells of the cord and cortex, and the atrophy of the crossed pyramidal tracts, would seem to aid in explaining the muscular rigidities. The atrophy and sclerosis of the posterior columns point toward the disturbances in equilibration and sensation.

Clearly all indications point toward a lowered nutrition of the cord and its blood vessels. This being so, the primary indication would be to improve nutritive supply and interchanges in the cord. This can be done by stimulating the arteriomotor mechanism governing the blood vessels of the cord, and better by mechanical than by other means. The application of mechanical stimulation of the spinal areas is of large efficacy, and yet practically overlooked and neglected. The use of Chapman's ice-bag was at one time recognized to be of much promise, but has fallen into neglect. This has been revived recently by Dr. Knoll in the treatment of arthritis deformans. I myself have had some admirable results from this agency in rheumatoid arthritis. The alternating use of heat and cold is an admirable adjuvant to this, employed at different periods of the day.

The clinical phenomenon of paralysis agitans upon which it seems most possible to exert an influence, and through the relief of which, in my judgment, improvement can be hopefully expected to the centers and to the thickened arterial coats, is the steadily increasing stiffness. This is much greater than, and in some respects different from, senile sclerosis, and is mainly confined to the voluntary muscles, and extends to the tendons and ligaments, until there is formed marked contracture difficult to overcome. These contractures are most marked about the torso and the upper portions of the nuchal regions, extending to the extremities and finally to the structures of the thorax, impairing respiration seriously, and often so affecting the tissues of the neck and thorax as to inhibit speech.

Digestion and the abdominal organs are little affected. Sleep is usually good, and great longevity is compatible with pronounced degrees of the disease.

The stiffness of the tissues described is analogous to that which occurs in advancing age, and the pathology points to similar structural changes. The means of relief have to do with the releasing of these stiffened structures. The disability is almost altogether confined to the lowered capacity of coördinating the limbs, but there are back of these structural changes in the tissues of a kind which seems to bear directly upon the functional activities more or less. I have seen but one case of paralysis agitans in which the individual, a blacksmith, seemed to retain full or nearly full muscular vigor, and functional capacity. I have seen a number of cases in which a large measure of contentment existed, and the patients often survived to a very great age. There are, however, occasional evidences of organic enfeeblement beyond what might be expected in the light of other circumstances. I have found that the systematized movements I employ not only rather rapidly and satisfactorily bring back coördinative and muscular power, but also exercise a beneficial effect upon the circulation and the vegetative functions. This is true in a like fashion when similar measures are employed to overcome the contractures and scleroses or xerosis of advancing years. Therefore, one can argue very little from this, as to differences in the pathology between Parkinson's disease and that of old age. So far as my observation goes, the greatest vigor is found in those cases of the disease which exhibit the largest degree of tremor. This may be a coincidence, and deserves wider observation. Three of the cases under my care showed very little tremor, and in all of them there was such a marked degree of physical weakness as to forbid the use of any but the simplest passive movements; otherwise they fell into a condition of feebleness which required rest in bed, tonics, etc. One gentleman who consulted me a number of years ago, a man in easy circumstances, rather young for the disease to appear, about forty years of age, declared that he was perfectly well except for the inability to control his hands, or to walk with precision. He fell ill and died at a distance, and it could be only learned that the condition was most indefinite, and it was my judgment that he possessed small resisting and less recuperative power. Those cases met in hospitals or asylums exhibit very little reparative capacity. The only one which showed good muscular strength was the one alluded to above—the blacksmith. This man was perhaps fifty years of age, or looked it, and attended the clinic on three or four occasions at long intervals. He was able to work at the unskilled labor of swinging a sledge.

The most satisfactory results in any of my patients was that of a man reported at length in my first paper, and as stated there he enjoyed excellent general health, and was of good strength. The results were excellent, although he died by drowning, making it impossible to know how far the improvement could have been carried. One lady of fifty-five, under my direction at a distance, whom I never saw, was treated most satisfactorily by correspondence through her son, evidently an intelligent and practical man. She is described as never strong, once thought to have general tuberculosis; later suffered an attack of exophthalmic goitre, and for past seven years exhibited enlarged heart, due to mitral insufficiency, still existing but now no worse. The onset of the paralysis agitans was indefinite; a weakness was noted four or five years ago, which became more pro-

nounced in 1899. The cause attributed is worry and business strain. She developed the typical symptoms and was totally unable to write, which was her regular occupation. There was more than the usual sensory phenomena, frequent neuralgic pains, and great cutaneous sensitiveness; digestion as in most cases excellent. The improvement is described as all that can be expected. She can now walk with ease and write comfortably, while the sleep is much better and the neuralgic pains and joint tenderness have almost ceased. She has gained in weight and is glad to live.

The one case in the Home for Incurables which improved markedly was that of an ex-policeman, of about fifty years of age, by far the youngest of the group, who had had a varied experience and the highest medical advice for many years. His constitutional vigor was moderately good, and no definite cause for the malady could be determined. Under the advice of Dr. Weir Mitchell he had had some parts of his fingers amputated, without relief. Several operations had been undertaken upon the tendons, again without relief, and one prominent surgeon had advised amputation of the whole arm. This man eagerly welcomed any new means of relief, and coöperated with us as well as could be expected. When treatment was first begun he was almost helpless, except when placed upon his feet, when he could walk fairly well in a straightforward direction. He could not make use of his hands to attend to his ordinary wants in dressing and feeding himself, unless helped by those about him. The tremor was very large and increased under several conditions, and his strength, as in such cases is usual, was limited. Exertion, moreover, was followed by marked prostration at first, and the treatment could be persisted in to only a moderate degree, until he gained strength, which was however rapid and satisfactory.

The special feature of the treatment I recommend in paralysis agitans can be described in a few words as being a series of carefully directed movements, both passive and active, by which the contractures shall be overcome, the joints loosened up, and flexibility compelled; and next education in voluntary movements, almost solely of the extensors in the arms and the flexors in the legs, not neglecting other muscles little used. These must be instituted gradually, because the tissues are extremely sensitive, and in the process of overcoming the contractures pain is caused far beyond that which results from the freeing of the contractures of cerebral and other forms of paralysis. Great soreness results for several days after, due to the breaking up of sclerosed tissues. This is not difficult to understand, because it is a familiar process to skilled masseurs, that very slow passive movements should be used in freeing the contractures of the limbs, the hands, and the feet. No one can be entrusted to do this till the physician has himself outlined the treatment, and he should also watch the progress and indicate changes or increments. It warrants a most careful personal observation of the more important measures used to overcome the contractures of the deep muscles of the back, neck, and loins. The movements are carried out, as any well educated masseur should know, while the patient is lying prone, first upon the back and next upon the face. The legs are raised, the knee pressed down so as to be held in full extension, and finally rotated and pulled similarly to the treatment for sciatica. Great attention must be bestowed upon both the hands and feet. It was an observation of Dr. Weir Mitchell long ago that forcible extension of the fingers and toes would overcome the tremor for several minutes. He never carried out this idea to the extent of making use of it as a practical therapeutic measure. After the limbs and extremities have been thoroughly treated, and moved passively in their normal directions, the patient is seated upon a level, preferably the floor, on a mat, and the operator seizing the head pushes it forward upon the chest by carefully graduated extensions and relaxations, increasingly day by day, until the stiffened back muscles relax sufficiently to thrust the forehead almost to the level of the legs. This causes excruciating pain, and is followed by the ordinary muscular soreness. The trunk is rotated on itself until the normal excursus is secured. Movements, passive and active, of the neck and upper torso and shoulders are of the greatest value, as there the scleroses are most man-

ifest. The disability is not the only thing, as the hardened tissues cause undue pressure upon the adjacent and contained blood vessels; thus the caliber of these and the lymph spaces are altered almost continuously, and the nutrition of the structures beyond is impaired, causing slowly lowered functionation. It has been my experience in the neck stiffness of mere senility, that when these structures become once loosened and are trained in elasticity, the powers of the organs of special sense, especially the eye and the ear, are notably improved, and the throat, voice, etc., exhibit improvement; and finally the blood supply to the brain is also obviously better, shown in greater clarity of thought and mental alertness.

While speaking of the movements for elasticizing the tissues of the back, I wish to emphasize the value of a measure I learned from a physical trainer, and which he uses empirically, and this is dry-cupping the region of the erector spinæ muscles. It is known to some physiologists, but apparently not to clinicians, that the spinal vasomotor centers, governing the circulation in the spinal cord, lie along the regions on either side of the vertebral column. Mechanical treatment of these areas influences tremendously the nutrition of the cord. The method of using the dry cups is important to clearly understand. A small cup with a rubber bulb is used; exhausting the bulb by pressure, it is made to seize upon the skin of the back, and is thence moved slowly and steadily up and down for a space of some inches, distributing the suction pressure and treating the entire spinal areas, part by part, for about ten minutes. This has an effect in dilating the blood vessels of the cord and aiding in its nutrition. It also seems to exert a valuable effect in improving the elasticity of the deep muscles and ligaments. After this treatment it always seems possible to secure a greater degree of loosening of these tissues, aiding the passive and active movements which follow. As has been remarked, one of the symptoms which seem to me constant in these cases is a density of the skin and subcutaneous structures, not only along the back, where it is most marked, but elsewhere. In addition to the cupping, careful manipulations are employed—effleurage and deep kneading over each part of the body, before employing the movements.

In addition to the many extensor and rotatory movements, which need not be enumerated, by which a greater freedom is acquired in the muscles of the trunk, it is necessary to give careful attention to the structures about the loins and hips. These are found to be, next to the torso, extraordinarily inelastic. The patient is made to kneel on the floor, supported on hands and knees; then one leg is advanced until the foot is placed alongside of the hand, the other leg straight out behind, and a swaying motion performed, the leg in full extension, which stretches the tissues around the pelvis increasingly; then the other foot is advanced and the dipping motion repeated alternately. Then the patient, still on hands and knees, as before, is made to stoop by the bending of the arms until the forehead touches the floor. The head is then raised and lowered, extended and flexed, a number of times. This is very difficult and often causes considerable vertigo, which later entirely disappears. Then the patient is placed upon his back, and the operator seizing one leg flexes it upon the body, keeping the knee-joint as straight as possible, and brings it forcibly over toward the corresponding shoulder, this alternately, until the foot can be brought in time to almost touch the ground above the shoulder. After a time both feet together can be thus pulled forward until they can be made to touch the ground beyond the corresponding shoulders. This should be followed by rest, lying down for some minutes. When the patient is strong enough the same results can be obtained by making him stand and hold on to a solid object, like a table, stooping until his knees bend completely under him, raising and lowering the body, and getting not only full extensor action of the legs, but a relaxation of the posterior tendons, which are usually found very stiff; then while standing facing the table, he is made to stoop by means of his arms, his legs being held straight, then raising and lowering his body upon his hands until the extensor power of the arms is fully exercised. Then standing with his back to the table, the legs held as straight as possible and the buttocks supported, he is made to stoop forward, reaching as

low down as possible, first with the left arm, the right arm held in the opposite direction upward, with the admonition to increase extension to the fullest degree for a few seconds; then alternating the movement, the right arm is extended downward and the left arm upward, increasing the force of the movement to the uttermost for a few seconds. A cardinal principle in all the movements of the extremities is to increase the force of the action until fullest extension is obtained, and this should be held tensely for two or three seconds. By this means volition as well as tissues are educated.

The surface circulation of the sufferers from Parkinson's disease is usually lacking in tone. The skin is pasty, yellow, and leaky, sweating readily, and is dense and inelastic. The subcutaneous tissues cling to the skin, especially in certain regions, as of the back, the neck, and the upper portion of the limbs. Sometimes the skin is dry and scaly; there is often a pityriasis. Treatment directed to these phenomena is particularly helpful to the systemic processes generally, as is true of all senile conditions. This should consist of thorough dry rubbing of the entire bodily surface daily, and better twice a day, for from five to ten minutes. It is better that this should be done by the patients themselves, through which a regular and useful kind of exercise is insured to that extent. If the skin be dry, this may be followed by the application of an oil, at least to the drier regions. When massage is employed, much attention should be given to the surface structures —first effleurage, next slow rotatory and pinching movement, by which the true skin and the adjacent tissues are separated and stretched. Dry-cupping effects this result, too, at least it puts the tissues in a preparatory state.

To sum up, the indications in Parkinson's disease are to overcome the growing apathy; to induce systematized return to normal activities; to use all gentle and yet forceful means to secure elasticity to the tissue; and finally to stimulate the circulation in the spinal cord by graduated pressure upon the spinal areas, through which reflexly many of the fibers in the cord can be restored to function and others improved. Above all, care and patience and persistence must be forthcoming on the part of the physician, and intelligent coöperation demanded in the patient.

Whether a cure can ever be attained is only to be learned by increasing experience, but the profound improvement obtained in some exceedingly severe cases warrants the hope that expectation, if moderate, can be at times exceeded. In so hopeless a condition these rational measures are certainly well worth a fair trial, and in the earlier stages of the disease they promise to secure abundant rewards.

A CASE OF LARGE AORTIC ANEURISM TREATED BY THE INTRODUCTION OF GOLD WIRE AND ELECTROLYSIS, FOLLOWED BY CEREBRAL EMBOLISM; RECOVERY.

By Julius L. Salinger, M.D.,
Physician to the Philadelphia Hospital; Late Assistant Professor of Clinical Medicine in the Jefferson Medical College.

The report of the following case is of interest, not only on account of the result, which was very satisfactory, but also because of the great size of the aneurism and the very advanced age of the patient.

While on duty as assistant physician to the Jefferson Medical College Hospital, the patient with the following history was admitted to the ward:

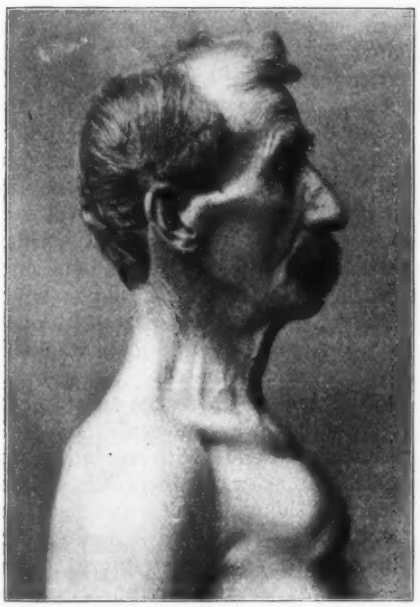
J. W. S., aged seventy-three, white, widower; by occupation a United States mail agent. Was admitted July 16, 1901. His family history showed that his father, mother, two brothers, and one sister had died of enteric fever. There was no history of malignant disease or tuberculosis in the family. It was ascertained from the patient's personal history that he had had the usual diseases of childhood—measles, pertussis, and scarlatina—from all of which he made a good recovery without complications or sequelæ. At thirty-five years of age he contracted a very severe attack of syphilis, which was almost of a malignant type, being under treatment constantly for over three years. At twenty six he had a severe attack of enteric fever, which confined him to his bed for seven weeks. For a period of thirty years he has been in the constant employ of the government as a mail agent, his duties being arduous, compelling him

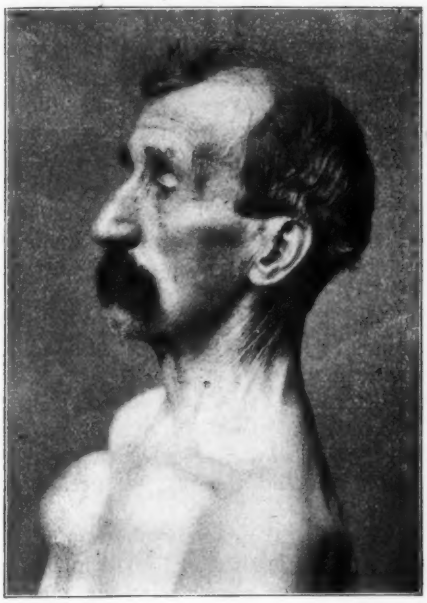
to be on his feet fourteen hours out of the twenty-four. In his occupation he is compelled to carry heavy burdens upon his right shoulder (mail bags), the shoulder and arm constantly being jarred in this way. He denies any direct injury to those parts or to the chest.

His present illness began two and one-half years prior to his admission to the hospital, manifesting itself by the appearance of a small tumor about the size of a "sugar plum," located in the neighborhood of the third intercostal space and the midclavicular line on the right side. This tumor has progressively increased in size; at the time of his entrance into the hospital it had attained the dimensions of a large orange. It measures in its transverse diameter 4½ inches, its greatest vertical diameter is 5½ inches. The tumor is bounded above by the lower margin of the first rib, and inferiorly by the upper border of the sixth rib. On the left it is bounded by the manubrium sterni, the right half of which is found to be eroded and entirely destroyed. The right boundary of the swelling is formed by the anterior axillary line. The patient states that during the time of the development of the tumor he frequently experienced excruciating pains in the immediate vicinity of the mass. At times these pains were almost constant, being of a gritty, boring character. At the present time these pains have almost disappeared, and the patient is comparatively comfortable. There is and has been no cough, nor unilateral sweating. He experiences no inconvenience whatever in the process of deglutition or of respiration.

Physical Examination.—The tumor previously mentioned is covered by skin darker in color than that surrounding the adjacent tissues. The mass is irregular in outline and its surface is studded with five or six nodular prominences. On pressure these are found to be elastic and much less resistant than the tumor proper.

On inspection, pulsation can plainly be seen in the tumor, which is found to have the rhythm of the heart. On palpation expansile pulsation is found to be present, and a systolic thrill may plainly be discerned. The apex beat of the heart is displaced downward and to the left, being felt in the left anterior axillary line in the seventh interspace. On ausculation the characteristic aneurysmal bruit is distinctly recognized, which is also heard posteriorly at the angle of the scapula on the right side. The tumor in its growth has almost entirely destroyed the second, third, and fourth ribs on the right side at their junction with the sternum. Auscultation of the heart reveals a systolic





murmur with its point of maximum intensity at the apex, transmitted to the left axilla and the angle of the scapula.

The sternum is found to be somewhat displaced to the left. Arteriosclerosis is well advanced in the temporal and radial arteries. The right pupil is larger than the left, but both react to light and to accommodation, though the right pupil is somewhat sluggish. The right pulse is decidedly smaller than the left.

Diastolic shock is marked over the sternum, but no tracheal tugging can be elicited. There are no abnormal physical signs to be noted in the lungs.

Repeated examinations of the urine upon different days gave negative results.

Examination of the Blood.—Erythrocytes, 4,687,500; leucocytes, 9600; hemoglobin, 71 per cent.; color index, .73; coagulation, 10 minutes 4 seconds.

The given blood examination is the result of an average of three specimens taken upon different days before the operation.

It was decided that owing to the many feeble points in the wall of the aneurism the only method which promised relief was the introduction of gold wire and electrolysis, as there was considered to be imminent danger of rupture. Having obtained the patient's consent this operation was determined upon, and four days after the admission of the patient to the hospital the skin of the tumor was made surgically clean and the hollow needle introduced.

The electrical appliances were in charge of Mr. Otto Fleming, of Philadelphia, and the writer was assisted by the resident physician, Dr. P. B. Bland.

The needle was introduced into one of the soft points in the aneurism, which at the same time was the most prominent, for two reasons: first, the introduction was easier and produced less pain; and secondly, it was feared that if the needle were introduced into a portion of the aneurism that was more compact it might dislodge parts of the clot (which was not to be feared in the soft parts of the aneurism), and so give rise to embolism. At the time of the introduction of the needle the patient's temperature was 98.4°F., pulse 72, respiration 24.

The needle was introduced with a rotary movement; there was very little if any bleeding, the patient expressing no signs of pain. The aseptic gold wire was fed from a coil and was readily passed into the sac of the aneurism, 16 feet being introduced in this way. The end of the gold wire was then attached to the anode of the battery, the cathode terminating in a large plate (which was frequently moistened) and applied to the back of the patient. The electric current was then turned on, and 5 milliamperes was registered; this current was gradually increased 3 milliamperes at a time until 65 milliamperes was passing. This process occupied about forty minutes. This current, however, gave rise to considerable discomfort, if not to actual pain, and it was then gradually reduced. In all the current was passing one hour and fifteen minutes.

After the current had reached 10 milliamperes, and was retained at this strength for a few minutes, the tumor became more firm and the pulsations were visibly reduced. This firmness became more marked as the operation was continued, and from time to time the pulsations were found to be less and the mass gained in hardness, until the day on which the patient was discharged from the hospital (Aug. 7, 1901) the mass was solid and the pulsation was scarcely palpable.

On the third day after the operation the patient suddenly lost power in the right forearm and hand, with partial motor aphasia. Coincidently there was decided evidence of shock, the temperature falling to 94.4° F., the pulse becoming very rapid, and the respiration almost stertorous. The skin was covered with cold, clammy perspiration. The patient became very restless. These symptoms, however, speedily improved, and by the time the patient was allowed to leave the hospital they had entirely disappeared. He had recovered his speech, and complete function had returned to the right forearm and hand. He was advised to lead a quiet life and give up his occupation, which however the patient declined to do. He returned to his heavy work, and several times (a few months later) described himself as feeling "first rate." In the middle of December, 1901, he contracted an acute illness, and as far as we could learn the symptoms were those of an acute croupous pneumonia. The patient suc-

cumbed to this attack. We were unable to obtain an autopsy. We learned however from friends that there had been no bleeding from the mouth, nor were there any signs of internal hemorrhage nor of external rupture of the sac; the tumor had remained firm.

Further comment on this case is hardly necessary. It proves what may be accomplished in large aortic aneurisms, even when there is danger of rupture and even when the patient is far advanced in age. The fact that this patient was able to return to his hard work shows that he could not have experienced any great difficulty from his aneurism after the operation. It is rather remarkable that the patient should have recovered so rapidly and completely from his cerebral embolism.

The treatment of the patient while in the hospital and after consisted in the administration of calcium chloride in small doses.

THE THERAPEUTIC USES OF THE PREPARATIONS OF BENZOIN.

By H. R. Coston, M.D.,
Birmingham, Ala.

I shall only consider those preparations of benzoin with which I have had personal experience. These are: Tincture benzoin, the compound tincture of benzoin, benzoic acid, benzoate of lithium, benzoate of ammonium, benzoate of sodium, benzoate of potassium, and benzoate of bismuth. Of this the benzoate of lithium is used by me more than any other. It is the benzoic acid present which gives utility to all of the preparations. Benzoic acid is excreted chiefly by the kidneys, principally as hippuric acid; a portion of it, however, as benzoic acid. Small quantities are excreted by the respiratory mucosa, and traces of it may be found in the saliva and in the perspiration. These preparations are antiseptic, antipyretic, analgesic, diaphoretic, and diuretic.

According to Brunton[1] a solution of 1 to 1000 of benzoic acid prevents the development of bacteria, and a solution of 4 to 1000 kills them.

They arrest putrefaction, cause an increase of the secretion from the respiratory mucosa, act as alteratives by virtue of their diaphoretic and diuretic qualities, and, greatest of all, render the urine sterile and acid, dissolve phosphatic and uratic concretions, and allay the pains present in the bladder due to chronic or acute cystitis with alkaline urine. They are used internally and externally.

Local Uses.—An incised wound in healthy tissue sealed with compound tincture of benzoin heals by first intention. Bryant[2] uses it in preference to any other occlusive dressing.

Either the tincture or the acid or its bismuth salt may be used with excellent results on cracked nipples, granulating surfaces, bed sores, chappend hands, anal fissure, and for the secondary period of frost-bite it would be difficult to find a better application.

Chronic forms of eczema are benefited by painting them with the tincture or dusting with the benzoate of bismuth.. Chancres and chancroids heal rapidly when dressed with aristol and benzoate of bismuth one part to four. After cleansing suppurating buboes with hydrogen peroxide and thoroughly drying them, they may be packed with the same powder with excellent results. Scrofulous skin lesions heal rapidly under a dressing of benzoic acid and oxide of zinc, equal parts.

In country practice some years ago I often saw cases of suppuration between the toes in barefoot boys who were out in the dew-laden grass early and late; they called the affection "dew-poison." It is accompanied with great itching, some pain, and suppuration, and is evidently an infection of the superficial layers of the skin through an abrasion of the cuticle. It heals rapidly by the use of benzoate of bismuth.

"Liver spots" will be removed by the use of the following:

℞ Tr. benzoin co., ℥jss;
Hydrargyri chlor. corrosiv., ℈j;
Aquæ Cologniensis, q. s. f℥viij.

M. Sig.: Apply twice daily.

I have used it in many cases.

For foul-smelling ulcers I know of no better dressing than benzoic acid or its bismuth salt. The sore should be well cleansed and dried, when it may be cov-

[1]Therapeutics and Materia Medica.

[2]Thomas Bryant: Surgery.

ered with the powder and bandaged under cotton. Usually the ulcers will be found improved at the next dressing.

Bartholow says that benzoic acid destroys the bacillus of diphtheria. Of this I cannot speak personally, but I do know that I have seen very sore throats greatly improved by the acid in solution or the tincture applied locally. The tincture cannot be used in a spray because it clogs the tips, but the vapor may be inhaled by placing half an ounce in a pitcher of hot water and enveloping the head and face and pitcher with a sheet or large towel. Used thus it is very useful in acute or chronic laryngitis or bronchitis, and especially so in the bronchorrhea often seen in the aged, with offensive sputum.

Internally.—The great indication for the internal use of the benzoates is ammoniacal urine. They change the reaction from alkaline to acid, and destroy the odor in twenty-four to forty-eight hours. A large part of it being excreted by the kidneys as benzoic acid, it stimulates the vesical mucosa to a more healthy action, and relieves the cystitis which is always present if the case is of long standing. Some prefer the ammonium salt. Whichever of the salts (or the acid) is used is of little importance, provided the stomach receives it kindly. The good work is accomplished by converting the insoluble urates, phosphates, and uric acid into the more soluble hippurates. The urine is rendered less septic, or becomes really antiseptic.

In cases of ammoniacal urine or chronic cystitis I give 15 or 20 grains every two to four hours, until the urine becomes acid, after that three times a day. It should be given largely diluted, and often a simple bitter, as gentian, given along with it will act beneficially by preserving the healthy action of the stomach.

Because of its action on the urates benzoic acid has been much used in rheumatism, but I have not had the results from it which have been claimed by others, and only employ it in such cases when the salicylates or salicin cannot be used because of their effects on the stomach. Lyman extols it as a remedy for gouty affections. My experience with gout has not been sufficient to allow me to speak concerning it.

Nocturnal enuresis of children with neutral or alkaline urine will be much benefited by its use. They should have three to five grain doses after each of the principal meals.

Headache of lithemic origin will be cured by the use of these remedies.

The acid has a gentle stimulant action on the gastric mucosa, creating a sensation of warmth and possibly increasing the action of the secretory apparatus of the stomach. It has a stimulant action on the liver and seems to increase the amount of bile discharged, but this is possibly apparent rather than real, the seeming increase being due to the decrease in swelling of the mucosa of the ducts and consequent free vent for its discharge. It alone cannot be depended upon, but in combination with other and more active cholagogues it has a very happy effect upon cases of torpid liver.

The benzoate of bismuth may be given in diarrheal troubles in children with excellent results. It is an antiseptic and astringent. It should be given in two-grain doses to a child one year old every three or four hours.

In chronic bronchitis benzoic acid or benzoate of ammonium will be found of signal service; and bronchorrhea of the aged with fetid expectoration will be much benefited by its use. It disinfects and liquefies the sputum and destroys the fetid odor. Acting as stimulant to the mucous membrane, it creates a healthier condition of its surface. In some cases of acute bronchitis, especially those of the lithemic diathesis, it gives good results, but experience has taught me that its greatest field of usefulness in these cases is after the subsidence of the acute symptoms. Acute tonsillitis and edema of the glottis are best treated by large doses every two hours given in half an ounce of whiskey (Seiler). The usual duration of such cases is from three to five days, but under the influence of the benzoates they may be checked in from twenty-four to thirty-six hours.

All forms of influenza are benefited by its use, and if there is much arterial excitement I like to add two or three drops of tincture of gelsemium to each dose.

As antiperiodics the benzoates are worthless; as antipyretics they are reliable only in so far as they exert their specific effects upon the disease for which they

are given, and the slight diaphoresis and diuresis which is caused by them.

The works consulted in the preparation of this article have been Hare's Therapeutics; Brunton, Therapeutics and Materia Medica; Shoemaker, Therapeutics and Materia Medica; Foster, Therapeutics; Lyman, Twentieth Century Practice of Medicine, article on Gout; Sajous on the Nose and Throat; Seiler on the Nose and Throat; Wood's Reference Handbook of the Medicine Sciences; and others, including the various year-books and medical journals.

COW'S MILK KUMYSS AS A NUTRIENT IN DISEASE.

By E. F. Brush, M.D.,
Mt. Vernon, N. Y.

About the year 1870 the first attempt was made to produce kumyss in the United States. A physician then residing on the east side in New York City ventured its production. He recommended it as a sure cure for consumption, but for some reason he did not persist for any length of time in its production.

Since that time thousands of physicians, druggists, nurses, dairymen, and others have been attempting to make kumyss in this country. Many formulæ have been published in the daily press, medical journals, cook-books, and dispensatories, but few have been able to make a satisfactory kumyss, and the reason is that it is far more difficult to produce alcoholic fermentation in cow's milk than in any of the other sugar-containing fluids. In the manufacture of fermented liquors a special knowledge of fermentation and temperature that influence this change is required.

The brewmaster must be one with a large experience in the art of brewing, and he must have a special training, although under ordinary circumstances a malt solution will undergo the alcoholic fermentation spontaneously. Cow's milk does not lend itself to the processes of fermentation necessary in the preparation of kumyss as readily as does mare's milk; and therefore the production of kumyss among the people who keep horses and use their milk is simple and easy even when the people do not understand the principles of fermentation or brewing.

As all the kumyss made on this continent is necessarily made from cow's milk it can be readily seen why the home-made product is so often a failure.

To produce good kumyss from cow's milk one must have, like the champagne maker, cellars with various temperatures so as to favor fermentation at the different seasons, refrigerating-rooms to check fermentation when it is sufficiently advanced, and experts to watch the process and know when to hasten, delay, or check it. Also there must be a dairy of perfectly healthy, clean animals, properly fed, whose milk is absolutely clean, and so handy to the laboratory as to be able to get the milk in time to commence the yeast fermentation before any of the other changes natural to milk have started.

So it can be seen that it must be more difficult to produce a good kumyss than it is to make a good champagne. Who would think of giving a guest, or a sick person, home-made champagne? although this variety of a sparkling wine could not possibly be worse than much of the home-made kumyss that is in the market to-day.

It requires from five to ten days to ferment cow's milk sufficiently to use it as kumyss, and when it is properly made it will keep in an ice-box, refrigerator, or any place where the temperature is below 40° Fahr., for from ten days to three weeks. But the best made kumyss will spoil within twenty-four hours if kept in a temperature above 60° Fahr., because as is well known all varieties of food which spoil rapidly in a high temperature digest easily if the spoiling process has not started first. Any preservative added to a food protects it against the digestive process as well as against the spoiling. Kumyss properly made—that is, cow's milk with all the fermentative sugar changed into alcohol and carbonic acid—will not undergo the spoiling changes if kept at a sufficiently low temperature in less time than ten days or three weeks without preservative. Any preservative is fatal to the usefulness of kumyss.

Writing about kumyss in Ziemssen's Handbook Dr. Stange says: "Kumyss claims a foremost place among those articles of food with which unfortunately physicians interest themselves less than

they do with drugs." And I suppose the principal reason for this lack of interest, especially in this country, is owing to the amount of poor stuff called kumyss that is thrown on the market.

Therapeutically kumyss is indicated in all diseases of the digestive organs, as catarrhs, acute and chronic diarrheas, and in many cases of dyspepsia. It is the most grateful and useful food in all the continued fevers, and in the convalescence from typhoid fever and pneumonia.

Kumyss is truly invaluable in the treatment of consumption. It is especially useful in the beginning of phthisis. It cannot do much if the patient is already in a stage of diarrhea and colliquative sweats. If kumyss is taken steadily in other chronic lung diseases the nutrition is improved.

Kumyss is very useful in anemia and chlorosis—in short, in all conditions of defective nutrition, as in protracted suppuration, prolonged lactation, in convalescence from fevers, in scurvy and its allied diseases, and as stated above, in diseases of the digestive organs. The properties of kumyss are briefly summed up as follows: The promotion of the formation of fat and promotion of sleep, the promotion of nutrition in general, and lowering of the temperature and the pulse.

Dr. Postnikoff, writing in 1873 in a Russian medical journal, said: "The action of kumyss on the organism can be characterized in three words: 'Nutrit, roborat, alterat.'" And he also said: "Kumyss exerts an alterative action on the vascular system, the pulse becoming fuller and more frequent."

For babies with summer complaint, or for badly nourished children, I quote the following clinical experience of two well known physicians:

"The next best food for babies is kumyss. In a certain proportion of cases it even excels all other foods. I will give you an instance. A doctor came to me in regard to his own child. The baby was four months old, and was suffering from summer complaint. He had tried all kinds of foods—sterilized milk and other foods. The child had wasted to skin and bone, and he was afraid that it could not live more than a few days. I was about getting off to the country, and I told this doctor that I could not go to see his child, but that I would advise him to try kumyss. He did so and he child recovered. He told me that the child commenced to pick up at once."[1]

Kumyss is particularly useful in cases of alcoholism and delirium tremens. Professor W. Gill Wylie, of New York, in an article in the *International Journal of Surgery* writes as follows: "I used this preparation with very marked success in a patient of mine who was recently taken sick with bronchitis, which developed into a pneumonia, and it became a very grave question whether he would live or die. He was a man sixty-five years of age, who had been a heavy drinker, and during his sickness his stomach refused food of every kind. I ordered six bottles of kumyss daily, which he took with excellent results, and I firmly believe that the man's life was saved in consequence.

"There is also another pathological condition in which I give kumyss with very decided advantage, and that is in patients who have delirium tremens. I am satisfied that delirium tremens is the result of exhaustion of the nervous system from lack of proper nutriment, and the best way to cure such patients, in my opinion, is to give them food that is at the same time nutritious and easily digested. I would give a patient with delirium tremens as much kumyss as he could take, and I have never yet known a patient who could take five or six bottles of kumyss a day that would not get well within a week."

Some of the most difficult cases of vomiting can be controlled better with kumyss than with any other food.

The quantity of kumyss can never be prescribed exactly; one must always begin with small doses and gradually increase it in such a manner as not to excite repugnance.

The amount for an adult is the largest quantity that may be taken without discomfort, two to six or eight bottles a day. The course of treatment is usually begun with two or three tumblerfuls a day, increased gradually to several bot-

[1] From a lecture before the nurses of the Babies' Wards of the New York Post-Graduate Hospital, by John H. Ripley, M.D., Professor of Children's Diseases in the New York Post-Graduate College, etc.

tles, and carried on about six to eight weeks; but it is more beneficial in chronic wasting diseases when prolonged, because of the comparatively little good done by kumyss in the first weeks. Some patients, though not liking kumyss in the beginning, become quite fond of it in time.

In the continued fevers the dose should be all that the patient requires, both for nourishment and to quench thirst.

With infants the dose is correspondingly small, in some conditions beginning with teaspoonful doses.

SUMMER COMPLAINTS OF CHILDREN.[1]

By Samuel A. Visanska, Ph.G., M.D., Atlanta, Ga.,

Visiting Physician to the King's Daughters' Hospital, Hebrew Orphans' Home, Woman's Coöperative Home, Children's Dispensary, Woman's Board City Missions.

As a student of pediatrics I take great pleasure in presenting this subject, and while many will differ with me in what I shall have to say, still my sole object is to try, if possible, to lower the death-rate of infants and children. The heated term will soon be upon us, and judging the future by the past, hundreds of children will be carried to their graves. What a great responsibility, then, rests on the physician, and if by an exchange of ideas we can come to a better understanding how to combat the disease, what a blessing it will be to all in the future! By summer complaints of children we mean gastroenteritis, enterocolitis, and colitis. I make this division of the diseases as we usually see them.

There have been and exist to-day so many theories as to the cause of summer complaints that time will not permit me to take them all up, but there is one theory above all others that I desire to see eliminated from the minds of every physician and layman—this is the teething theory. Being called to a little patient during the summer, the first question we ask the mother is: What seems to be the trouble with your baby? Nine times out of ten the answer is: The baby is teething and the bowels are "running off." Questioning the mother further: How long has the baby been sick? Answer, four or five days. Have you called in another physician? No, the baby is just teething, and I thought it was natural for the bowels to run off. What have you given the child? Well, I gave it a dose of oil, and that did not seem to do any good; then I gave it calomel; then the good old grandmother came along with her grandmotherly advice; then one of my neighbors heard the baby was sick, said her baby once had the same trouble, so I tried her remedy, but it did not have the desired effect, so I had to call you in. Then we ask how many stools the child is passing; the answer is anywhere from twelve to twenty. Upon examination you find the child almost a skeleton, face pinched, eyes sunken, thirsty, restless, feverish, and delirious. Such is the picture often presented to us at the bedside.

To my mind teething has absolutely nothing to do with diarrhea, and every modern text-book on pediatrics will agree with me. We forget that children born at a certain time will teethe during the winter; how many cases of winter diarrhea are you called to attend? Nearly all the diseases of childhood have been ascribed to teething, but there is no one who does not admit that some children have teeth without disturbance.

In children of a nervous temperament we sometimes find them a little fretful or cross, and in the evening a slight rise of temperature. There is no treatment for teething, as it requires none. Even an increased flow of saliva should not be overlooked, and a stomatitis should be carefully treated. There is no intimate connection between healthy dentition and the flow of saliva. A child dies of teething and summer complaint, and little is thought of it. Let a child die of diphtheria, and the people throw up their hands in horror. The taking away is just the same.

In looking over the death record in Atlanta, I see several cases of death from teething reported, and I am only surprised that the Board of Health

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[1]Read before the Georgia Medical Association, at Columbus, April 15, 1903.

accepted such death certificates. A diagnosis of heart failure would be far more scientific, yet the Board of Health will not accept such a diagnosis, and they are quite correct. As to the true causes, I attribute heat, low power of resistance, bad ventilation, overcrowding, improper diet, too much diet. Clinical experience teaches us that infants do not stand extremes of heat and cold. My opinion is that the extremes of either lower the power of resistance, and that bacteria do the rest.

In the short time allowed to this paper, I will only be able to take up the principal points of treatment and not go into details. All cases of enterocolitis are not true cholera infantum, and Rotch has placed this disease where it belongs, under specific infections—diseases caused by a specific organism, and characterized by acute gastroenteric disturbance with intense choleriform symptoms. The term cholera infantum should be exclusively restricted to this class of cases, and should not be used to designate the many acute and serious attacks of vomiting and diarrhea which are so often designated cholera infantum. It is a rare disease, and Rotch is correct. Recently a serum has been discovered which is said to be almost a specific for this disease, and I trust it will soon be placed upon the market.

Being called to a case of enterocolitis, four things are to be considered: (1) To assist the effort which nature is making to free the stomach and intestine from the poison which is in them; (2) to restore the surface circulation, which is seriously interfered with; (3) to supply water to the tissues, which are being drained to so great an extent; (4) to support the strength until the disease has run its course. The poison seems to act with especial violence upon those portions of the economy where it is more complicated, namely, the stomach and intestines. We therefore have at first extreme irritation of these parts, which causes increased peristalsis, and later vasomotor paralysis, with great transudation of serum. This condition of the gastroenteric tract should be borne in mind during the whole course of our treatment. The condition of the mucous membrane is such that absorption of drugs does not take place readily, therefore great care should be used in their administration. In the acute stage the digestive functions fail to act, therefore food of any kind is "adding fuel to the fire." Not a drop of milk should be given. This prohibition of milk must be absolute, whether from the mother, wet-nurse, or bottle. You are dealing with a poison more deadly than arsenic.

The second thing to do is to remove as far as possible the poison in the alimentary canal. Taking a lesson from nature, the vomiting and purging are attempts to eliminate the harmful substances, but like other attempts on the part of nature are ineffectual and exhausting. Lavage of the stomach and intestine should be done at once. Delay is dangerous. The stomach can be washed with warm water containing a teaspoonful of common salt to the pint. After this organ has been thoroughly cleansed, three to five grains of calomel should be given dry on the tongue. If vomiting returns, repeat the irrigations. Of course the calomel is given for its antifermentative action, and in order to reach the small intestines, which are inaccessible by the process of irrigation. The bowels should be irrigated with warm water and Castile soap, not less than a gallon of water being used. A little later an injection of cool water containing thirty grains of tannic acid to the pint should be used. Some of the poisons formed are, as we all know, proteids which are precipitated by tannic acid; therefore the object of the tannic-acid irrigation is to render inert any soluble poisonous proteids which may remain in the intestines after the first washing. If the rectal temperature is very high, ice-cold water can be given by enemata.

When the vomiting has continued for some time, and there is prostration with great thirst, the infant should be allowed to suck sterilized ice-cold water from the bottle (to which a few drops of brandy have been added). If vomiting and diarrhea continues to be excessive, a hypodermic of morphine 1/100 grain, atropine 1/800 grain, should be given for an

infant a year old. The effect should be carefully watched, and the dose repeated if necessary.

To restore the circulation, or if there are signs of collapse, nothing is better than the hot pack. This should be given by wrapping the child to the chin in sheets wrung out of water at least as hot as 100.2°. It then should be enveloped in a hot blanket. This procedure should be repeated as often as necessary. While the infant is in the pack water can be given freely by the mouth, and a subcutaneous injection of normal salt solution should be given. To keep up the heart's action, minute doses of strychnine, digitalis, and nitroglycerin are at times indicated. As the disease clears up a little sterile food should be given; the child should be kept outdoors as much as possible, fresh air being an important factor in all diarrheal disorders in summer.

Enterocolitis.—The dietetic management and internal treatment are similar to that of the preceding disease. A dose of castor oil, then calomel, is to be promptly administered, and followed in a few hours by copious irrigations of the colon, preferably tepid saline solutions. Later a thin starch solution, to which a few minims of laudanum have been added, may be gently thrown into the rectum, to be repeated if necessary. For intestinal putrefaction nothing is better than salol and salicylate or subnitrate of bismuth, though every physician has his favorite prescription. Opiates should only be given when absolutely necessary.

Colitis.—In the treatment of colitis we have three things to combat—tenesmus, the passage of mucus and blood, and a great many stools. The diet should be easily digested food. Our object now is to relieve the straining, lessen the frequency, and change the character of the stools. Nothing acts better than the following:

> Sulphate magnesia, grs. v;
> Tr. opii deod., min. ss to j;
> Syr. tolu, min. xv;
> Aq. menth. pip. q. s. 3j.
>
> M. Sig.: A teaspoonful every two hours to a child one year old.

The opium should be ordered separately, as you may want to increase or decrease the dose, or leave it out entirely. After a few doses you will get the desired effect; then large doses of bismuth subnitrate should be given, say, to a child one year old, a half-drachm every two hours. Do not be afraid to give the bismuth; small doses are useless. High irrigation of the colon with normal salt solution should be given morning and evening, and an occasional dose of calomel and soda is often required. During convalescence tonics are indicated. A change to the mountains, country, or seashore will often prove beneficial.

CONSERVATIVE TREATMENT OF THE ANTRUM OF HIGHMORE.

By Preston M. Hickey, M.D.,
Detroit, Michigan.

It would be better perhaps not to dignify these remarks by the name of paper, but rather entitle it a protest against too radical measures early in the course of acute inflammations of the maxillary sinus. The thought which prompted this protest was suggested by the course of two cases, the history of which I will briefly relate.

Case I.—Mr. A., aged twenty-seven, whose general health had always been excellent, and who had never suffered any special inconvenience with the upper respiratory tract, contracted a severe cold. Within a few days, during which the symptoms of coryza were prominent, he was taken with a chill, followed by sharp rise of temperature, accompanied with pain in the left maxillary sinus. His attending physician, recognizing the character of the infection, called in a doctor of dental surgery, who at once advised immediate operation, extraction of a tooth, drilling into the antrum, and putting in a drainage-tube. As these measures seemed somewhat radical, the patient decided to have further consultation, and I was asked to see the case. The temperature when I saw the patient on the fourth day after the chill was 101°. The pain was well localized over the left maxillary sinus, and inspection of the anterior nares showed the membrane of each naris quite swollen. The patient complained of extra discharge at times from the left nostril. Transillumination with the electric lamp showed distinct opacity of the left antrum.

As my experience had taught me that where the route of the infection was evidently from the nares these cases tended usually to spontaneous cure, I advised the use of palliative measures. Accordingly one-per-cent solution of cocaine was advised as a spray to be used every two hours to secure contraction of the swollen mucosa, followed by a spray of the freshly made solution of suprarenal extract; also frequent washing of the nasal chambers with a mild alkaline wash. The patient was directed to keep the recumbent position, and to lie as much as possible on the right side, so as to afford proper drainage. Two or three days of this line of treatment relieved the pain and soreness, and in about ten days transillumination examination failed to show any fluid in either sinus. Frequent examinations since then covering a period of three years have failed to show any trouble with the sinus.

CASE II.—Dr. W., aged thirty-five, dentist, has complained of difficulty in breathing through the nose for many years. He had passed through the hands of several nasal specialists, and had had the nasal mucosa in each nostril cauterized many times. When he came to my hands I found the nasal passages on each side very narrow, and the membrane over the inferior turbinals pretty well scarred. I removed the hypertrophied posterior tips of the inferior turbinals with the snare, which procedure gave the patient great relief. One year after this operation he contracted a severe cold with prominent nasal symptoms, and in the course of this coryza the left maxillary sinus became infected, and with the usual symptoms—rise of temperature, chill, pain, etc. As the patient had seen some of the operative work of his brother dentists he broached the subject of opening the antrum, which I at once disapproved of. He was given a solution of adrenalin hydrochloride 1 to 4000, and directed to use it as a nasal spray every couple of hours. This solution was sufficient without the preliminary use of cocaine to keep the nasal passage free and the mucous membrane of the maxillary outlet of the antrum sufficiently contracted to admit of proper drainage. As the symptoms were not at all distressing he pursued his usual avocation. Resolution in this case was somewhat delayed, as it was fully three weeks before the transillumination tests showed that the antrum was free of discharge. Delay in this result, I think, was due to the fact that drainage during the day was interfered with by the erect position of the patient.

Finally I would summarize my experiences in the following conclusions: First, acute inflammation of the antrum of Highmore, when due to nasal infection, should be treated conservatively for the first two weeks; secondly, the constringing effect of adrenalin hydrochloride affords us a valuable non-toxic agent in reducing the swelling about the hiatus semilunaris; thirdly, in cases of severe symptoms the proper position to secure most favorable drainage from the natural outlet should be insisted upon.

POISONING BY CAMPHOR; HISTORY OF CASE; RECOVERY.[1]

BY CHARLES STANLEY WHITE, M.D.,
Washington, D. C.

The case cited below is not extraordinary, though sufficiently uncommon to excite interest, and is one that impresses us with the fact that camphor is not the harmless drug it is generally believed to be. The case should serve as a warning in the indiscriminate use of camphor by the physician and laity, at the same time reminding us of the fallacy of the teaspoonful.

Mrs. M., twenty-four years, married, blonde, weight 110 pounds. Family history unimportant. Previous history: During childhood she suffered with chicken-pox, whooping-cough, and yellow fever, in the order named. In 1893 she developed malarial fever. After measles, the next year, nervous prostration developed, and her ill health confined her to bed for one year. She has since been free from disease except for an occasional indisposition. She was married in 1898, and one year later became the mother of a healthy infant.

Present illness: For the week previous to her use of camphor she had been com-

[1]Read at the meeting of the Columbian Medical Society, Washington, D. C., March 14.

plaining of lassitude, sore throat, cough, coryza, slight chilliness, and little or no fever. She should have menstruated on the 6th, but the flow was not established promptly, which however was not an infrequent occurrence. During the day she read or heard that camphor would increase the menstrual flow, and for that reason she purchased two ounces of the spirits of camphor (U. S. P.) the following morning. At 10:55 A.M. February 7 she took a teaspoonful of the official spiritus camphoræ (the spoon held 1¼ drachms). One half hour later the dose was repeated. Not getting the desired effect by 11:55, the third dose was taken with some difficulty, as she noticed considerable repugnance to the medicine, which was not apparent with the first dose. Eructations, with marked taste of camphor, were present for a few moments. Within five minutes after swallowing the third drachm and one-fourth her head ached slightly, and she felt such a sense of oppression and closeness that she at once hastened toward the door for air, but for some unaccountable reason sat down before reaching it, although the total distance was not twenty-five feet. She remembers speaking to some one who came in, and that was at twelve o'clock, but of the next hour and a half she has no recollection whatever.

Between 12 and 12:15 she was found with legs, thighs, and body extended, head drawn slightly back, her hips resting on the edge of the chair. She made rational replies to two questions, but her mother became frightened upon discovering her eyes rolling from side to side, accompanied by irregular movements of the head. She was spoken to sharply and roughly shaken, but was not aroused. Immediately there was extreme rotation of the head and body to the right, and at this time attempts were made to place her upon a couch, but in the efforts to move her she fell upon the floor, became rigid, jaws firmly locked, frothing at the mouth, eyes open and fixed. She was then transferred to a sofa. Afterward it was discovered her lips were cut by teeth, and urine voided involuntarily during this paroxysm. The duration of these symptoms was not over ten minutes, probably only one or two. Every effort to have her swallow was futile. I was telephoned for at this time, and being unable to go at once, ordered whiskey and instructed the family to get another physician without delay. The rigidity gave way to irregular movements of the arms, described as picking at her clothes, then screaming and struggling, with endeavors to regain her feet, but she seemed so utterly exhausted by these exertions that she soon sank back upon the sofa, lying rather quiet except emitting an occasional moan. Whiskey was given at this time. Dr. Siebert saw her at 1 P. M., and described her condition as follows: "Found patient lying on a sofa, arms extended, head on one side, semiconscious; respirations somewhat accelerated; pulse 120, full. Her mother informed me that she had had a 'convulsion,' but during my visit she had nothing further than tossing of head from side to side. The condition of patient resembled hysteria very much. Pupils were normal, reacted to light. Patient responded to questions when asked in loud voice. Hyoscine hydrobromate, 1/200 grain (by mouth), was given, and she soon quieted, so that at 1:30 I left her to attend to other duties, and case passed to hands of Dr. White." The first intimation of camphor poisoning was her voluntary explanation at 1:10, and after the use of hyoscine.

I saw her shortly before 3 P. M. At this time her pulse was good (102), temperature 98.4°; and I learned then that she had taken three teaspoonfuls of spirits of camphor. The amount of whiskey given was about 1¼ ounces, and just before Dr. Siebert arrived. She seemed perfectly conscious and complained only of headache; was removed to her room. At 5:30 P. M. pulse was 108 and full, pupils dilated (probably due to hyoscine), and intense frontal and temporal headache; there was no odor of camphor. She slept from 4 to 5.30. At 7.30 pulse was 92, temperature 99°, headache severe, for which was given migraine tablet of caffeine, acetanilid, and soda bicarbonate. Milk at 6.30 caused nausea. Urine was voided frequently in quantities of four to six ounces.

The following morning, March 8, she complained of soreness in legs, abdomen, arms, and back, no coryza, and coughs

occasionally. Lip was sore and showed laceration from tooth. She slept fairly well and awoke early, with headache, which soon disappeared.

An analysis of urine voided about four hours after last dose of camphor had the following characteristics: Clear, yellow, no sediment, specific gravity 1021, acid, no albumin, no sugar, urea 2½ grains to 1 ounce. Microscopic examination: A few round and squamous epithelial cells. Few days later no sugar was present in urine.

The subsequent history is without incident, except that menstruation occurred on the 11th, and the sexual appetite was not appreciably affected any time after taking the camphor.

Naturally the diagnosis was impossible without the history, but that being ascertained, the cause of the seizure was scarcely in doubt, though the possibility of menstrual epilepsy was considered.

The case is almost a typical one, the prominent symptoms being an epileptiform convulsion and headache. In addition, many cases present a picture of collapse.

In the library of the Surgeon-General I find about seventy-five cases recorded, of which the large majority recovered. The first case to be published appeared in 1832, in which Dr. Eickhorn,[1] in a letter to Dr. Hays, relates his personal experience with gum camphor, of which he took about two drachms. No convulsions followed, but the pulse became too rapid to count, and a delightful exhilaration followed, of which he says: "Certainly champagne never brought on a more pleasing intoxication."

Socquet[2] details an autopsy showing congestion of cerebral meninges and typhoid lesions, and gives as cause of death typhoid fever and poisoning by oil of chamomile camphor. Prentiss[3] in 1892 mentions a case in which camphor was taken to produce abortion, with serious consequences; this, by the way, is the most recent case reported in America.

Hare[4] gives the dose of the spirit of camphor as one-half fluidrachm, but the U. S. Dispensatory allots five minims to a teaspoonful. Just how many minims a teaspoonful represents depends very much on the spoon, and varies from sixty to one hundred and twenty, as Hallberg[5] points out in an article on the "Dosage of Liquid Medicines." Ten grains have destroyed the life of a sickly infant,[6] and two hundred grains have been taken without fatal results.[7]

The antidotes recommended are water to precipitate the camphor, followed by emetics; alcohol stimulants and nitroglycerin or amyl nitrite.

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A PHARMACOLOGICAL STUDY OF AN ASEPTIC PREPARATION OF ERGOT DEVISED FOR HYPODERMIC AND INTERNAL ADMINISTRATION.[1]

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In a paper entitled "Ergot Aseptic" which the writer presented before this section some five years ago, attention was called to the great variability in the physiological activity of the crude drug and finished products of ergot, as shown by feeding them to cocks and observing the amount of blackening of the comb and wattles, and the abortifacient effects upon pregnant animals. As a result of the experimental studies I proposed for hypodermic administration a non-alcoholic, permanent, sterile, active preparation of ergot, containing a minimum amount of the inert and objectionable constituents of the drug, put up in hermetically sealed glass bulbs. Abundant opportunity has been given for criticism of these opinions, and for testing the therapeutic value of the product by pharmacologists and clinicians since then; but judging from the many oral and written comments that

[1] Read before the Michigan State Medical Society, June 12, 1903.

have been received, the preparation has given much satisfaction in the limited field where it could be employed. In order to produce a preparation that could be employed for both internal and subcutaneous purposes, the experiments have been continued, and I desire to present to you to-day the results obtained.

That we may have a clear understanding of the properties that should be presented in a preparation of ergot for general clinical purposes, it will be desirable for us to briefly call attention to the chemistry and pharmacology of the drug before considering the special properties of the new preparation.

Owing to the ease with which the active principles of ergot undergo decomposition from chemical or bacteriological action, but partial success has followed the numerous attempts that have been made to isolate them in pure form. Frequently an investigator has obtained results which were directly opposed to the views of another equally as good an observer. Indeed, so unsatisfactory is our chemical knowledge of ergot that I believe we may truly state that up to the present no one has succeeded in obtaining an active principle of ergot in pure form. It is generally believed, however, that the drug contains three more or less well-defined active principles, which have been isolated and known by many different names: (1) Ergotinic acid (sclerotic or sclerotinic acid, etc.), a nitrogenous glucoside. (2) Sphacelinic acid (sphacelotoxin, spasmotoxin), a nitrogen-free resin. (3) Cornutin (ergotinin, etc.), an alkaloid.

1. Ergotinic acid was first described by Zweifel, later and more completely by Dragendorf and Podwyssolski, who studied its action upon frogs, and because of its general toxic action and the production of diastolic stoppagé of the heart, believed it to be the desired active constituent of the drug. Based upon their observations many different preparations have been made, which contained as large a percentage of the sclerotic acid as possible; Bonjean's ergotin, nearly all the so-called extracts of ergot found in the pharmacopœias of this and European countries; the special aqueous preparations of ergot designed for hypodermic use, etc.—are the class of preparations containing the largest quantities of this constituent. In other cases where no endeavor is made to retain or exclude ergotinic acid, very large quantities are found present, as in the U. S. P. fluid extract, etc.

Kobert and Greenfield, of Dorpat, were able to show by a large number of experiments upon animals that ergotinic acid when injected subcutaneously was absorbed very slowly, and acted upon the tissues as an irritating foreign body, producing marked inflammatory action at the point of injection. So conclusive were the results obtained by these investigators, and so frequently have they been confirmed by other competent observers since, that it may now be considered as practically proven that the untoward results—inflammation, abscesses, etc.—following the hypodermic administration of ergot depend almost entirely upon the presence of this constituent. When solutions of this constituent are absorbed, and particularly when injected intravenously, marked depression and final paralysis of the spinal cord follow, and the animal dies from respiratory failure. The depression of the vasomotor center results in a pronounced fall in blood-pressure. The higher centers are less affected. The effect in general then upon the central nervous system is exactly opposite to that desired in those conditions where ergot is given. When taken internally it is believed that ergotinic acid is so quickly decomposed by the digestive juices that no harm results.

2. The sphacelinic acid of Kobert, or the sphacelotoxin of Jacobi in combination with ergocysin or secolin, is probably the most important active principle for therapeutic purposes. This poorly defined constituent is generally believed to be the active principle which produces the blackening and gangrene of peripheral parts of animals, which has been noticed from the earliest times, especially in fowls, pigs, and other animals that have been fed upon ergot or have subsisted upon rye containing ergot. The gangrene is probably due to the shutting off of the blood-supply to the parts by the prolonged contraction of the arterioles through the stimulation of the vasomotor center (Kobert), direct action upon the walls of the peripheral blood-vessels (Jacobi), and formation of thrombi of hyaline material, which is secreted

by the walls of the blood-vessels when under its influence.

Considerable irritation of the alimentary canal is produced, often resulting in vomiting and purging.

Marked increase in blood-pressure naturally results from the general constriction of the blood-vessels, which probably augments the reflex activity of the spinal cord, bringing about the desired effect upon the uterus. Jacobi frequently found that sphacelotoxin produced abortion in pregnant animals, and concluded that the uterine contractions engendered by it closely resembled the normal peristaltic contractions of the uterus in character, which in experimental animals expelled the young without doing any serious damage to parent or offspring. It may be, as Cushny suggests, that there is a direct action on the muscle fibers of the uterus, and especially does this view seem probable when it is recalled that Jacobi found that the unstriped muscle fibers of blood-vessels are acted upon locally.

The central nervous system as a whole is more or less stimulated, but no pathological changes have been found.

3. The alkaloid cornutin is associated very closely with the last named constituent in producing the therapeutic effects of ergot. Large doses produce strong stimulation of the central nervous system, frequently producing convulsions in both warm- and cold-blooded animals, which, when large doses are given, is followed by depression and paralysis. The circulatory system is not influenced directly, but the blood-pressure is often considerably raised from stimulation of the vasomotor center; in some cases there is no increase in blood-pressure owing to the marked slowing of the heart from vagus stimulation.

Kobert reports that cornutin produced powerful peristaltic action of the alimentary canal and in the pregnant and non-pregnant uterus, in the latter instance without expelling the young. Since the amount of cornutin found in ergot is extremely small, it is scarcely probable that it has much influence, as found in most preparations of the drug.

A consideration of these facts led me to believe that for practical therapeutic purposes it is much better to think of ergot as possessing, aside from oils, mineral salts, and other inert substances, two groups of pharmacological substances, acting in opposite directions.

The first of these, ergotinic acid, may be taken as a type, acting as irritating bodies when injected into the tissues, depressing the central nervous system, and are without any specific action upon the unstriped muscle cells of the blood-vessels or uterus.

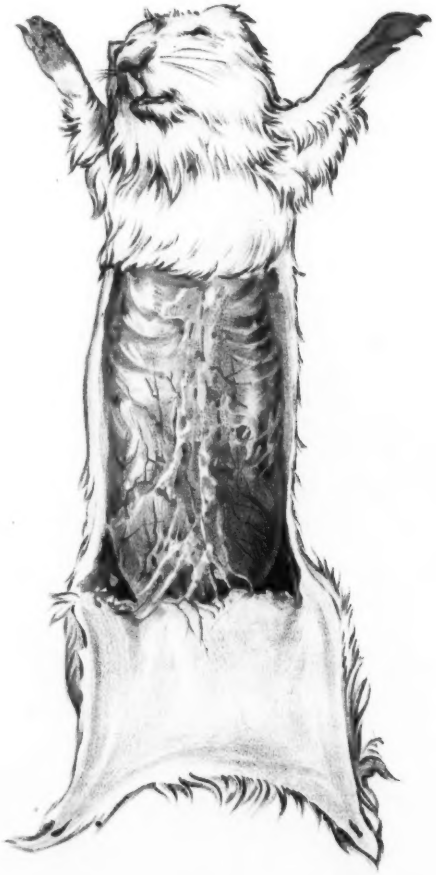
The second, and the only group of substances of clinical importance, of which sphacelinic acid and cornutin may be taken as types, act upon the walls of the blood-vessels, stimulate all parts of the central nervous system, and stimulate the unstriped muscle fibers of blood-vessels and uterus.

Keeping this view in mind no attempt was made to isolate the so-called active principles of ergot, but to obtain in solution as large a percentage of the second groups of substances as possible, rejecting as large an amount of the inert, irritating, and depressing principles as possible. This was accomplished by percolating the drugs with various menstrua, and throwing out by appropriate precipitants the undesirable portions, each step of the process being checked by testing the precipitates or filtrates, as the case might be, by administering them to cocks and observing the blackening of the combs and wattles, observing the amount of irritation produced by hypodermic injection into guinea-pigs, and studying the abortifacient action of the final product upon pregnant animals. This product, as you will notice, is a clear, transparent, light amber fluid which represents one part by weight of crude drug, or of the same strength as the U. S. P. fluid extract of ergot. On account of the ease with which it underwent bacterial decomposition, it was found necessary to devise some means of satisfactorily preserving it.

Having found in my studies upon the pharmacology of chloretone—a condensation product of acetone and chloroform with which you are all probably more or less familiar—that it possesses considerable local anesthetic power, that it does not precipitate albumen, or produce other harmful results when injected subcutaneously, and possesses an antiseptic action about fifteen times as great as bo-

№1.

№2.



№3.

racic acid, it seemed to me that it would be the desired preservative. Accordingly, just sufficient quantity of chloretone to act as a preservative was added. The sample package you have before you is the final product obtained, which on account of its composition and to avoid confusing it with other preparations of active principles of ergot I have named "ergone."

A summary of the experimental data and conclusions to be drawn, relative to the pharmacologic and therapeutic properties of ergone, may be briefly stated as follows:

Several samples of the preparation were exposed in open and closed bottles under various conditions, and from time to time cultures upon various kinds of culture media were made from them; in no case did growth occur, thus showing the product to be entirely sterile.

Owing to the local anesthetic property of the contained chloretone upon the terminations of the sensory nerves of the stomach and the absence of irritating constituents, the product, as shown by experiments and clinical reports, is well borne when given internally.

In order to show the influence of the preparation upon the tissues when injected subcutaneously, as compared with a U. S. P. fluid extract of ergot, from which the alcohol had been removed, and an aqueous preparation of ergot which contained large quantities of sclerotic acid and other inert or undesirable constituents, several series of guinea-pigs were injected with suitably sized doses of each preparation. The animals were killed some hours later by chloroform, the skin covering the point of injection being turned back and the condition noted. The average amount of irritation following these injections is well indicated in the water-color drawings:

No. 1 shows the condition resulting from the injection of a U. S. P. fluid extract of ergot from which the alcohol had been removed.

No. 2. The results produced by the injection of the aqueous preparation containing large quantities of the sclerotic acid.

No. 3. The results shown from the injection of the new preparation, from which the sclerotic acid and other inert or irritating constituents have been removed.

As you will notice, Nos. 1 and 2 show marked inflammatory reactions which extend to a considerable distance around the point of injection. There is likewise, as indicated by the blackened portion of the drawings, left behind considerable unabsorbed material. In marked contrast with these is the practically normal appearance of the tissues following the injection of this preparation, indicating that absorption promptly and completely followed the injection without irritation.

The toxicity of this preparation of ergot was compared with the U. S. P. fluid extract of the drug by determining the minimum lethal dose when administered in various ways to frogs and guinea-pigs, as types of warm- and cold-blooded animals.

1. When the preparations are injected into the abdominal lymph sacs of frogs, the fatal dose of the new preparation of ergot is four times as large as the U. S. P. fluid extract—*i.e.*, the U. S. P. fluid extract, when administered in this way, is four times as toxic as the new preparation.

2. When given per stomach to guinea-pigs the minimum fatal dose of the U. S. P. product is about one-third that of the new preparation—*i.e.*, the toxicity of the U. S. P. product, when administered internally, is three times as great as the new preparation.

3. When the preparations are administered subcutaneously to guinea-pigs the minimum fatal dose of the new preparation is six times as great as the U. S. P. fluid extract—*i.e.*, the fluid extract preparation is six times as toxic as the other.

From these figures it will be readily observed that the new preparation of ergot possesses the very great advantage of being less toxic than the preparation of ergot made according to the direction of the Pharmacopœia. Other preparations of ergot, as Bonjean's extract, etc., were likewise found to be considerably more poisonous.

To determine the pharmacologic activity of ergone appropriate doses were administered to cocks and pregnant animals. In the former characteristic blackening of

the comb and wattles followed, while in the latter abortion frequently resulted, which indicate that the preparation may be expected to produce the desired therapeutic effects when administered to human beings.

From the above we may conclude that this preparation of ergot is aseptic, non-irritating when given internally or subcutaneously, much less toxic than the U. S. P. fluid extract of ergot and is physiologically active. Further clinical trial will demonstrate whether it is worthy to come into permanent use as a therapeutic agent.

THE APPLICATION OF ADRENALIN TO IRREDUCIBLE HEMORRHOIDS WITH THREATENED STRANGULATION.

At a meeting of the Société Médicale des Hôpitaux of Paris on January 23, M. A. Mosse called attention to the value of the application of adrenalin to irreducible hemorrhoids threatened with strangulation—a method recommended by M. Bouchard in the *Presse Médicale* of December 31, 1902. A man, aged thirty-six years, was admitted to the hospital on December 18, 1902, with a painful hemorrhoid mass which extended three or four centimeters from the anus. It consisted of external hemorrhoids which covered a black internal hemorrhoid. Symptoms began five days before with pain and swelling in the anal region. A warm bath was ordered. On the following day the condition was little changed. A tampon of cotton-wool soaked in a solution of adrenalin, 1 in 2000, was placed in contact with the most turgescent part of the hemorrhoids. In eight minutes the part became paler and the turgescence diminished. The same effect was produced by applying adrenalin to the other parts. The patient became more comfortable, but he was not free from pain, and reduction did not seem feasible. He passed a better night. On the next morning the local condition was better than before the application, but the tension and volume of the hemorrhoids seemed greater than when the adrenalin had produced its immediate effect. A tampon soaked in solution of adrenalin, 1 in 1000, was placed in contact with the internal as well as the external hemorrhoids. The congestion and pain diminished more rapidly than on the previous day. In thirty minutes the right side of the external swelling subsided and lost its red color, while the skin formed folds. Another tampon was applied, and the left side subsided, and the patient could sit up and became free from pain. But digital pressure provoked pain and contraction of the sphincter, and it was thought best to postpone reduction of the hemorrhoids. Under the influence of the adrenalin the pulse fell to 54. In the evening reduction was easily performed. During the night two stools were passed without pain. On December 21 the patient did not complain of hemorrhoids, but examination showed that they had recurred, no doubt as the result of defecation, but they were much smaller than before and strangulation was not threatened. After a further application of a 1-in-1000 solution of adrenalin recovery became complete. Though it cannot be said that the adrenalin cured the patient of his hemorrhoids, it obviated an operation which otherwise seemed necessary.—*Lancet*, April 11, 1903.

THE USE OF CAMPHOR IN THE ABSTINENCE PERIOD OF MORPHINE WITHDRAWAL.

In reviewing Hoffman's article on the value of camphor during the period of morphine withdrawal (*Therapeutische Monatshefte*, July, 1902) Erlenmeyer (*Therapeutische Monatshefte*, February, 1903) claims that to those accustomed to its use morphine acts as a vasomotor and cardiac stimulant, raising blood-pressure and increasing the force of the heart, and says that the symptoms of withdrawal are due to a fall in blood-pressure which occurs when the stimulus produced by the morphine is removed.

He attributes the beneficial results obtained by the use of camphor in this connection to its stimulating effect upon the vasomotor center in the medulla, by which the tonicity of the blood-vessels and rise of arterial pressure is restored.

Hoffman's theory that morphine causes a primary fall in blood-pressure is discussed at length.

The Therapeutic Gazette

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Leading Articles.

THE MEDICAL TREATMENT OF URINARY SUPPRESSION.

It is not our intention in this editorial to deal with the surgical measures which are so frequently necessary in the treatment of this serious condition, but rather to call attention to certain medical facts in connection with the matter which may not be without interest. Urinary suppression from a medical point of view occurs in two forms, one of which cannot be considered as real, namely: true urinary suppression which is due to an arrest of the function of the kidneys, and fictitious suppression which is simply due to the fact that the bladder retains the renal secretion because of some nervous or anatomical condition. The first is, of course, the much more important of the two. It usually cannot be relieved by any operative measure, and indeed it is very frequently produced by some operative procedure, particularly if that procedure has dealt with the urinary organs. It has been our experience that in a number of cases of suppression of urine following severe operations the renal activity can once more be brought into play by the use of nitroglycerin in fairly full doses with the object of relaxing the spasm of the renal blood-vessels, which probably has resulted through reflex activity, and it is interesting to note that our forefathers were wont to employ the spirit of nitrous ether as a diuretic without the knowledge which we now possess that the increase in urinary flow which it produces depends upon the relaxation of the renal blood-vessels, which all members of the nitrite group of drugs produce. In still other instances large hot poultices or compresses applied over the loins and back will produce equally good results; and again we have known the injection of large quantities of cool water into the large bowel to be followed by similar good effects. In still other instances, where the vitality of the patient forbids the injection of cold water in this manner, we have known the injection of large quantities of hot water to produce good results; and while none of these measures are efficient in increasing the quantities of solids in the urine, if the kidneys are inactive in this part of their function, they nevertheless certainly do aid in some cases in reëstablishing urinary flow, and so indirectly enable the kidneys to eliminate from the blood certain impurities which if retained will act disadvantageously.

An interesting paper dealing with this subject has appeared recently in the *Journal of the American Medical Association,* in an article by Whitacre, of Cincinnati. In the obstructive form of suppression he well says that operative measures are the only ones to be resorted to. In the non-obstructive form he thinks that caffeine and digitalis are useful, but we must remember that they are not useful if the suppression is due to reflex irritation, but rather if it is due to renal inactivity or atony.

For the suppression which follows shock he believes that heat, stimulants, and the intravenous injection of salt solution and strychnine are the chief measures to be employed. Personally we would modify this, however, to the employment of Adrenalin Chloride hypoder-

mically, or intravenously, in place of strychnine, and in the use of salt solution by hypodermoclysis rather than by intravenous injection. Increasing experience leads us to believe that intravenous injection has many disadvantages, and that it does not exercise any direct useful influence in cases of shock, since the blood-vessels are so dilated that they can contain much larger quantities of fluid than can be safely injected.

QUININE HEMOGLOBINURIA.

The THERAPEUTIC GAZETTE during the last decade has frequently provided its readers with the best and most recent information in regard to the relationship which is supposed to exist between the administration of quinine to certain cases suffering from malarial infection and the development of hematuria or hemoglobinuria as the result of such administration. Our original, editorial, and progress columns have from time to time contained reports of interesting clinical observations in regard to this subject, which is naturally viewed as one of the greatest importance by those practitioners who live in malarial districts. As many of our readers know, there is great diversity of opinion in regard to the influence which quinine exercises in these cases, some claiming most positively that quinine in severe malarial infection is not responsible for the hemoglobinuria, and others asserting that its administration is a very grave mistake. We have already advanced the view that doubtless at some future time it will be found that the hemoglobinuria, in some of these cases at least, does not depend upon the malarial parasite, but upon some other organism or infection which simultaneously exists, and that therefore quinine may be advantageous for patients with the bloody urine of pure malarial infection, and disadvantageous in that form which is due to another cause as yet undiscovered. It is only by some such supposition that we can find an explanation for the very divergent and exceedingly positive views which are held by many practitioners of large experience in regard to this important therapeutic point. In the progress columns of this issue we have abstracted the report of a case in which quinine certainly seems responsible for the hemoglobinuric attack, and does much to prove the claim that quinine is capable in certain cases of malarial infection of producing so-called black water.

THINKING AND PRESCRIBING.

We have been much interested, and indeed amused, by perusing certain editorials which follow one another in the *Montreal Medical Journal* for May, 1903. The worthy editor of that useful publication has had a series of experiences which have caused his facile pen to call attention to certain abuses, faults, or misconceptions which he thinks deserve public censure. As most of his remarks illustrate the fact that foods and drugs are often employed without a sufficient amount of thought being employed, we are glad to quote from what he has to say, as it serves to emphasize a number of facts which we have often spoken of in these columns. He first directs his lance against the so-called cereal health foods, and asserts that none of those which are advertised to-day are as valuable as Graham flour or any better than ordinary bread or common porridge, the only difference being the higher price. He then proceeds to show that certain of these products contain fewer calories than many other forms of food which are commonly taken, although he admits that under certain circumstances they may be taken by idle women who would not take more homely porridges. More emphatically than ever he condemns many of the so-called gluten preparations, which really contain an excess of starch, and in the ardor of his condemnation he quotes from Swift this sentence: "Truly when I consider that natural disposition in many men to lie, and in multitudes to believe, I have been perplexed what to do with that maxim, so frequent in everybody's mouth, that truth will at last prevail;" and our friend, the editor of the *Montreal Medical Journal,* believes that truth has not yet begun to prevail in that sphere of human activity which has to do with the supply of cereal food.

He next proceeds to call attention to the large number of so-called proprietary preparations about which medical men are continually "circularized," and thinks that the remedy lies in the employment of those products only which are made by reputable and ethical manufacturers, whose products we habitually employ with perfect security, and to avoid the employment of the products of those firms who will hasten to use the name of the doctor as a means of still further advertising their wares. It is interesting in this connection to notice that analyses made by the Inland Revenue Department of Canada showed that out of fifteen samples of tincture of opium only four were genuine, some being deficient in alcohol or opium, five being deficient in opium, in one instance amounting to 50 per cent. The analysis of citrate of iron and quinine produced similar results. Still another analysis made by the same department revealed shocking delinquencies in a large number of ordinary preparations which we would suppose were too cheap to justify adulteration, such as tincture of gentian and tincture of cardamoms, rhubarb, jalap, and myrrh, while the spirit of nitrous ether and dilute hydrocyanic acid showed also equally poor results.

Again, our editorial friend condemns those newspapers which give up a very large percentage of their space to what might be called "illegitimate medical advertising," and finally he concludes with a half-humorous editorial upon "Meaningless Experiments," in which he calls attention to the futility of untrained men undertaking researches which they are not qualified to complete, and from which they are also not qualified to make justifiable deductions. Thus, in a certain instance, it is stated that an experimenter transplanted the pancreas of a cat to the body of a patient, and he states that all three—cat, pancreas, and patient—were the worse for it.

USE DRUGS ONLY AS THEY ARE NEEDED.

We wish to call attention to an article which appears in the progress columns of this issue of the GAZETTE by Dr. E. P. Davis, the Professor of Obstetrics in the Jefferson Medical College, in which he sounds an emphatic note of warning against the irrational and indeed harmful employment of drugs in the treatment of puerperal sepsis. We have so frequently in these columns insisted upon the fact that remedies which have power for doing good must also possess the power of doing harm that we hesitate somewhat in calling attention once more to a subject the truth of which seems so self-evident. Yet the very facts which are mentioned by Dr. Davis indicate that the profession are all too willing to give remedies with the hope that they may be of value in checking the progress of the malady. There can be no doubt that where stimulants are really needed they should be employed, as should all therapeutic measures when conditions really call for their use. But it is also the function of the physician to remember that he must be careful to do no harm in his endeavor to do good, and it is better for a physician to err on the side of ultra-conservatism, and let his patient have a chance to get well, than in his anxiety to continually pour into his patient remedies which may be of uncertain value, or which may seem to be indicated for their influence in one direction when in reality their power for harm in another may make any influence which they may exercise for good a very small part of the effect upon the patient.

THE EFFECT OF SYPHILIS IN SHORTENING LIFE.

Though it is generally held that syphilis, properly treated, is in the majority of cases an easily, safely, and radically cured disease, and that it does not seriously affect any of the vital functions, questions concerning this disease put by most life insurance companies suggest that when its sequelæ are properly considered, even though it be radically cured in the majority of cases, there are a sufficient number whose lives are materially shortened to make a careful weighing of the effect of this disease upon mortality a matter for serious consideration.

Bramwell, writing on this subject, believes that a strong man who has had

syphilis should not be accepted as a first-class life, holding that every case in which a history of constitutional disease is disclosed should have imposed upon it an extra. It is probable that only a small part of the mortality of syphilis is the result of tertiary lesions as ordinarily recognized. More frequently aneurism of the aorta, aortitis, paralysis of the insane, tabes, cirrhosis of the liver, and kindred diseases are the immediate cause of death. Considering tabes alone, it is practically conceded that 75 per cent of all these cases are syphilitic. Bramwell notes that in 17 of 32 fatal cases in which the exact date of the syphilitic infection was definitely determined, the expectation of life was diminished by 270 years. Three-quarters of the cases of general paralysis of the insane are also generally conceded to be syphilitic. This is a disease which is practically always fatal, terminating in from two to six years. From a statistical study of the Scottish Widow's Fund, it was seven years from 1888 to 1894.

Bramwell arrives at the conclusion that in each of the cases of general paralysis of the insane, the expectation of life was on an average diminished by twenty years. Taking everything into account, it can scarcely be doubted that the longevity of syphilitics is on an average shorter, and considerably shorter, than that of people with similar surroundings who have not contracted this disease.

A careful study of this question on the part of life insurance companies would be highly instructive if it were possible to conduct it with scientific accuracy. As far as the evidence afforded by clinical observation is concerned, it would seem probable that a syphilitic treated thoroughly and conscientiously, and not overtreated, from the beginning of the attack through a period of three or four years remains entirely cured; that such treatment, even when the initial infection has been severe, though not an absolute guarantee against sequelæ, constitutes the ground for a fair assurance that such will not occur; that probably the large majority of intelligent, well-to-do people afflicted by syphilis are not more injuriously affected by it in so far as their vitality and longevity are concerned than they would be by an attack of typhoid fever; that some few cases, in spite of careful treatment, and a considerable percentage of those who are careless in regard to treatment, show crippling sequelæ which are obviously and directly responsible for shortening life; that certainly syphilis is indirectly responsible for causing more deaths than we are accustomed to attribute to it.

Perhaps the most important conclusion to be deduced from a study of syphilis and its remote sequelæ is as to the necessity of prolonged treatment. Fournier, the acknowledged authority on this subject, has long since shown from a statistical study, based mainly on his own enormous experience, that tertiary manifestations of the disease are inversely proportionate to the length and thoroughness of the specific treatment of secondary lesions. It is probable that dependence should not be placed upon a two-years' course of mercury supplemented by potassium iodide, but that an intermittent treatment should be pursued for at least four years, and even for a longer period than this when even the slightest tertiary manifestations show that syphilis has not been completely eradicated.

HYSTERECTOMY IN THE TREATMENT OF PUERPERAL SEPTIC INFECTION.

In a case of puerperal septic infection virulent and progressive in spite of the most carefully directed conservative treatment, the total removal of the source of infection would seem to be so clearly indicated that there should be no question as to its advisability, and this no doubt would be the case were the infection at the time when its progress has become sufficiently pronounced to justify a consideration of so formidable and mutilating an operation as hysterectomy still a purely local infection. Treub and others have, however, shown that in the large majority of cases the uterine inflammation is attended by infection which has spread far beyond the limits of this organ, and is complicated by an acute nephritis, purulent thrombosis, and other grave lesions, even though there be a complete lack of clinical evidence as to the existence of such complications. Indeed, Treub holds that it is quite impossible to differentiate

between operable and non-operable conditions in puerperal sepsis, and that hence attempts at surgical relief are futile. In his collection of thirty-six cases of uterine ablation in which no other structures were involved, there were fifteen recoveries, and these he believes would have done equally well without hysterectomy, noting that sometimes seemingly hopeless cases recover spontaneously.

Jewett, who contributes an admirable statistical study of this question (*American Gynecology,* February, 1903), is not prepared to accept Treub's views as to the fatality of hysterectomy in cases of infection. He has collected 112 cases with 59 successful results. In 25 cases in which no extra-uterine structures were involved, 19 were saved. But 2 of 12 patients in whom peritonitis existed in some degree recovered, and but 2 of 12 cases in which bacteriological examinations showed the presence of streptococci either in the uterine cavity or in the myometrium were saved. The percentage of recoveries was greatest when the operations were performed in the first and third weeks, and the results were as favorable when abdominal hysterectomy was performed as when the uterus was removed by the vaginal route. Jewett believes that the large number of successes under most unfavorable conditions is significant, since nearly every instance in which the woman survived should be counted a life saved by operation. With few exceptions the prospect as indicated by the clinical facts and findings of operation was manifestly hopeless but for the radical course adopted. He concludes that experience justifies the assumption that while hysterectomy is seldom demanded in the treatment of puerperal septic infection, the operation cannot wholly be rejected, and in rare instances is clearly indicated. When other means have been tried fully and the usual measures are apparently hopeless to avert a fatal issue, surgical intervention should be considered. When it is impossible to determine from clinical evidences the precise location and extent of the infectious process, an exploration of the pelvic contents through abdominal incision would seem to be indicated. If this should show that the uterus is the chief source of danger from causes not amenable to lesser measures, there should be no question as to the desirability of its partial or total ablation if the general condition of the patient permits of such a procedure. Other septic foci may be dealt with at the same time; thus Bumm, Freund, and Trendelenburg have successfully ligated thrombotic veins in the broad ligament. Baldy removed large septic thrombi from the pelvic veins. Sipple reports a case in which the right hypogastric vein was ligated, after the draining of a parametric abscess. As the septic symptoms persisted, a portion of the ovarian vein was ligated and resected. The thrombi in it showed streptococci. No chills appeared after this and the patient slowly convalesced. As is well known, the prognosis in the grave forms of phlebitis attended with repeated chills and high temperature is generally hopeless. In such cases the veins must be ligated and excised. By such radical means it seems clear that life at times may be saved.

The difficulty in the practical application of such a procedure lies, however, in determining exactly when such an operation is called for. It is no doubt many times performed when a favorable period for intervention has passed. Prompt intervention would surely subject to a mutilating procedure women who might have recovered without operation. The advice given by Jewett to resort to surgical means as soon as it becomes obvious that conservative measures are futile is theoretically ideal, but is in practical application fraught with such difficulty that the gynecologists are not likely at all after a considerably wider experience to give the profession a united opinion upon this subject.

A NEW ANESTHETIC COMPOUND.

Although recent literature records a steadily increasing number of surgeons who employ pure ethyl chloride either for brief operations or as a preliminary to the administration of ether or chloroform, there is very little said about anesthol, a drug which is apparently extensively used by dentists. This latter drug is made up of 83 per cent volume of a molecular solution of ether and chloroform, and 17 per cent volume of ethyl chloride which has a boiling point of 104° F. It is a clear, transparent fluid of a specific gravity 1.045, agreeable in odor,

and with a boiling point of 104°. It is a chemical combination and not a mixture. An analysis of the actual quantity of each of the three drugs contained therein shows that there is 17 per cent of ethyl chloride, 35.89 per cent of cholorform, and 47.10 per cent of ether, representing a proportion of 1, 2, 3; thus corresponding somewhat to the English A. C. E. mixture.

Meyer, as a result of an extensive personal experience, notes that this drug should be administered by the drop method. He employs an Esmarch mask with a double frame, which is covered with a doubly-folded piece of sterile gauze and a piece of oiled silk, the latter having an opening of about the size of a silver dollar in the center. The dentists use a very ingeniously constructed mask on the same general principle. The drug should be given drop by drop. Its administration is said to be unattended by struggling. When given too rapidly there is often respiratory difficulty, but rarely any influence on the circulation.

As soon as the second stage of anesthesia has been reached, one or two drops every two or three seconds suffice. The administration of drops, however, must be continued throughout the narcosis. Because of the boiling point, very little of the anesthetic is stored in the body, the patient exhaling almost as much with each expiration as has been previously introduced on inspiration. Hence he is never more deeply narcotized than is necessary.

Because of the fact that even profound anesthesia does not always abolish reflexes, Meyer advises the administration of morphine hypodermically one-half to three-quarters of an hour before beginning anesthesia in all cases. If the reflexes still persist, an additional dose of morphine is employed. It is stated that profuse secretions of mucus and saliva never occur, that there is no cyanosis, the patient appearing to be in deep, natural sleep. The awakening is quick.

Vomiting as a sequel is rare, as are also headache, malaise, and general systemic affections. Meyer notes an occasional increase in the symptoms of a previously existing nephritis, and records two deaths in his own experience, believing them directly attributable to the anesthetic.

Guth, in two other cases anesthetized by the drop method, notes that surgical anesthesia is established in the majority of cases in about eight minutes without the stage of excitement when morphine had been given.

Meyer holds that anesthol is the least dangerous of all anesthetics. This still remains to be proven, nor in view of our greater experience with ether and its well established safety can the profession be expected to adopt a new method, which from this one report would seem not even to be time-saving.

Although it is held that the cholorform and ether used in anesthol form a new compound, the prejudice against the former drug is so great in large sections of this country that this alone would prevent the use of a mixture which is known to contain a large proportion of it. Moreover, Meyer notes that two cases have resulted fatally, and finds the agent so lacking in complete anesthetizing and relaxing power that he precedes its administration by hypodermic injections of morphine, a drug which in itself is highly objectionable from a surgical standpoint. The fact that the symptoms of preëxisting nephritis are aggravated suggests that even though chloroform has formed a new chemical compound, the well known irritant effects of this drug on the kidneys are still manifested.

It would therefore seem wise to await further reports from Germany, the world's experimental ground, before possibly risking valuable American lives by the administration of an anesthetic which has not even the virtue of being time-saving.

Reports on Therapeutic Progress

ANTISTREPTOCOCCIC SERUM AND ITS USE IN MALIGNANT ENDOCARDITIS.

In the *Lancet* of March 14, 1903, OGLE reports a careful study of the value of this serum in the condition named.

The conclusions he draws from his tables are: (1) that the gravest symptoms, combined with streptococcic infection, even of the blood stream, are not incom-

patible with recovery if treated by injections of antistreptococcic serum; (2) that this is true also in malignant endocarditis, but that here the chances are probably less favorable on account of the colony of micrococci involved in the vegetations in constant contact with the blood stream; (3) that in malignant endocarditis staphylococci are frequent, or a mixed infection of staphylococci and streptococci; and (4) that if an examination of the blood be negative it would be prudent, therefore, to use injections of antistaphylococcic together with antistreptococcic serum.

THE ETIOLOGY OF ECLAMPSIA.

In the *Boston Medical and Surgical Journal* of March 19, 1903, is an account of the Proceedings of the Obstetrical Society of Philadelphia, in the course of which KRUSEN divides the treatment of eclampsia into: (1) prophylaxis; (2) treatment of convulsions; (3) treatment during intervals; and (4) after-treatment.

Prophylaxis is directed to the prevention of convulsions and the strengthening of vital processes. The amount of urea excreted is considered the best guide, and when it falls below 1.5 per cent there should be stimulation of all excretory processes. The liver and the intestinal tract should be stimulated by the administration of frequent and small doses of calomel, one-tenth grain three times daily for one or two weeks. Caffeine in three-grain doses, three times daily, may be given for diminution of urine. If there is high arterial tension, nitroglycerin in full doses is indicated. The writer calls attention to the connection between the inadequate action of the thyroid gland and the arrest of renal secretion, quoting Nicholson, who has given thyroid extract in eclampsia with favorable results, and advises that it be given in five-grain doses night and morning, and proteid foods avoided. Saline solution dilutes the poison in the blood and produces diuresis and diaphoresis. Iodide of potassium is sometimes added to the saline solution, the iodine acting as a stimulant to the thyroid gland. Dr. Krusen thinks that upon a thorough investigation of the relationship between the thyroid gland and pregnancy depends much of the future success in the prophylaxis of eclampsia.

In the treatment of the convulsions he considers chloroform as the anesthetic *par excellence* for their control, and inhalation of it should be continued until the paroxysm abates. Oxygen may be given in conjunction with it. Ice-bags applied to the back of the head and neck will also aid in warding off and controlling the attacks.

In the treatment during the intervals one of the most important measures is venesection. It is indicated when the pulse shows high arterial tension, is full, rapid, and bounding, and the face of the patient is suffused or almost cyanotic. In such cases it frequently rescues the patient from impending pulmonary edema and apoplexy; and it also abstracts a large amount of noxious principles from the system, and will do more for the relief of the patient than any other one procedure. By using copious injections of normal salt solution the depressing effect of bleeding can be counteracted and the unknown toxins diluted. Since the salt solution stimulates the heart, promotes diuresis and diaphoresis, and dilutes the toxin, it must be classed as a rational method of treatment. Bicarbonate of potassium is sometimes added to the solution. Morphine can be used hypodermically. It is an agent of great power and rapid action, things often essential in the prevention of repeated convulsions. The writer condemns hot-air and hot-water baths, and advises as purgatives croton oil, calomel, or some saline; as carbon dioxide poisoning soon occurs in cases of repeated convulsions, oxygen by inhalation may be used.

In regard to obstetric treatment, the writer believes that the teaching of Duhressen is sound, that if eclampsia comes on during the last month of pregnancy, when the child is viable, its speedy extraction is desirable. But the high mortality of Cæsarian section leads him to condemn that operation unless some condition such as pelvic deformity prevents vaginal delivery. If the patient is in the second stage of labor, all authorities agree that the uterus should be emptied as speedily

as possible, but in cases in which labor has not begun, or is in the first stage, opinions differ. But as expectant or palliative treatment means certain loss of the child and the loss of thirty per cent of the mothers, he believes that while the obstetrician should not cease to combat the convulsions, the sooner he produces or hastens the labor the better for both lives concerned. Mechanical dilatation of the cervix, either manually or with dilating bags, or deep cervical incisions, properly performed under rigid antisepsis, is the best method of procedure. Delivery should be accomplished as rapidly as possible, since the prompt emptying of the uterus contributes greatly to the recovery of the patient. The after-treatment should be carried out along the ordinary lines followed in the care of the puerperal patient, but with absolute quietude, and with more vigilant attention to all the excretory organs.

THE THERAPEUTIC VALUE OF ADRENALIN.

In the *British Medical Journal* of February 21, 1903, DUNCANSON reports his experience with this new remedy. He says that this is claimed to be the active principle of the suprarenal gland, and is conveniently supplied in an aseptic solution as adrenalin chloride solution 1 in 1000 by Parke, Davis & Co. The author believes from his experience that it is altogether more practicable and efficacious than a solution of crushed suprarenal gland tabloids.

The three cases reported are taken from a large number in which he has used this preparation, and in all with marked improvement.

The cases are chosen because he had previous medical knowledge of each patient; their clinical features are so dissimilar, and the results of previous treatment unsatisfactory.

CASE I.—H., male, aged five years. In May, 1901, falling on a sharp stick held in his hand, the right tonsil was penetrated, making a ragged wound which would admit the end of a black lead-pencil, but was of no great depth. Bleeding was profuse, and the blood, pale-brown in color, did not coagulate. The child an hour after the accident was pallid and inclined to faint. Tincture of iron chloride 2 parts and liquor hamamelis 1 part on wool was applied freely and held in position; plugging was impossible, the bleeding being a rapid oozing, and it was not possible to ligature any vessels. With local and general treatment the boy made a good recovery in eight weeks; at first his condition was very critical, with profound anemia and constitutional disturbance. Some months later he had a severe attack of epistaxis, which was easily controlled by plugs of gauze soaked in adrenalin solution 1 in 1000.

On September 13, 1902, he collided with a perambulator, and the pointed end of a brass rod struck him at the middle of the upper orbital ridge on the left side. The mother thought the wound insignificant, and having some adrenalin solution, applied it on linen, and as the bleeding almost at once ceased, did nothing further.

On September 16 alarming bleeding occurred, and the child was seen by the author on September 17 at 1 A.M. The upper and lower left eyelids were swollen and deeply ecchymosed; there was a small irregularly shaped punctured wound, with edges showing no signs of healing, in the middle of the left eyebrow; from this blood was pouring out in a steady stream. There was little or no coagulative power in the blood. A plug of gauze packed into the wound passed in a downward direction for three-fourths inch, and in no way controlled the hemorrhage; to pack tightly was impossible owing to the situation. Duncanson then soaked a piece of double cyanide gauze in adrenalin solution 1 in 1000, and passed it round the wound, packed in a fresh portion treated in the same manner, and bandaged tightly with a pad over all. In sixteen hours he renewed the plug, and again in another twenty-four. No further bleeding took place, and the wound granulated up in ten days. The boy is a hemophilic, and the history of the two accidents treated by the old and the newer methods is striking.

It is, however, in bleeding from the urinary organs that we expect to find the best results, and experience shows that it is so.

CASE II.—W., male, aged thirty-two

years, suffered from hematuria three years ago. The author sent him to Guy's Hospital, when a nephrotomy was performed, without any obvious cause being discovered for his trouble. He remained fairly well, with some renal pain, but no hematuria, until he was revaccinated by a public vaccinator. He had a very bad arm, and on the tenth day there was alarming hematuria. This is interesting, for we know hematuria is sometimes a complication of smallpox, and evidently was induced by the vaccination in this case. The author immediately gave him five-minim doses of adrenalin solution every hour for four hours, and afterward every two or three hours; the bleeding ceased in twenty-four hours and never returned.

CASE III.—T., male, aged thirty-four, had acute gonorrhea three years ago, and had eight months' internal treatment without success. The author saw him then, and by a combination of injections and internal medication succeeded in improving his condition, but could not cure him, though he employed every local measure.

On November 21, 1902, he had a persistent grayish-white discharge of mucous material, occasional pain referred to the point of the penis, and forking of stream of urine on micturition. Catheter No. 9 passed easily to the membranous portion of urethra; then there was conveyed to the hand a sensation of passing through a spongy structure, the instrument was gripped by muscular spasm, but finally passed painfully into the bladder; there were a couple of drops of dark blood in the eye of the catheter on withdrawal. The same instrument was again passed till the point reached well into the prostatic urethra, and then on withdrawal 2 drachms of a 1-in-8000 solution of adrenalin chloride was left behind by means of a pipette attached to the catheter; this caused warmth, a little pain which continued for some hours, and was followed by no blood. He was given an injection of 1-in-20,000 adrenalin chloride to be used daily, and no internal treatment.

On November 28 micturition was less frequent, and there was no scalding, no pain, and the discharge was less. He introduced by the same means half a drachm of a 1-in-1000 solution. The instrument now passed easily, with no pain. The injection was given as before, and there was the same feeling of warmth afterward. On December 12 the discharge had practically ceased. Half a drachm of the solution (1 in 1000) was left at seat of trouble. There was a little pain and tingling at the end of the penis. He gave internally half a drachm doses of saw palmetto and santal three times a day.

June, 1902. He has had no further urethral trouble, has gained flesh, and has no discharge whatsoever.

December, 1902. There is now absolutely nothing to be discovered about the urethra; micturition is easy and painless, no discharge.

In this case not only has the eroded mucous membrane been relieved, but an appreciable effect has been exercised upon the stricture itself.

THE PRESENT TREATMENT OF PUERPERAL SEPTIC INFECTION.

To the *Philadelphia Medical Journal* of May 23, 1903, DAVIS contributes an excellent paper dealing with this question. In regard to methods of treatment which must be considered injurious he says that if one reviews the treatment of puerperal septic infection he will find that, like the treatment of diphtheria, there is scarcely a drug in the Pharmacopœia which has not been commended in this condition. The author believes that many a woman has been sacrificed to indiscriminate and wholesale drugging. In a case seen in consultation, he once found a patient taking ten different drugs to cure puerperal septic infection.

We believe it to be a great mistake to give a septic patient drugs to reduce temperature. Pathology teaches us that temperature is but a symptom and that it rarely injures a patient. No drug controls temperature without depressing the patient. In the use of cold and the administration of alcohol, or in hot sponging followed by the use of alcohol, with or without cold, we have methods of treatment which are not only not depressing but distinctly conservative and stimulating. The author has made it an invariable rule at the Jefferson Medical College Maternity to allow no antipyretic drugs to be administered to puerperal patients.

Another source of useless and injurious drugging is the anxiety of the physician to stimulate the heart. He seems at times to forget that the heart is largely a self-regulating mechanism, and that it always endeavors to accommodate its work to the conditions under which it is placed. It is true that there are times in treating septic cases when the value of digitalis becomes evident, and there can be no possible objection to its use, provided it is so administered that it does not lessen the patient's appetite and interefere with digestion; but its use is seldom necessary in septic patients, and if the patient's nutrition be properly secured, the heart muscle will do its work and will often emerge from a trying septic conflict in a remarkably good condition.

Another injurious use of drugs in septic cases is the effort to check the purgation which nature often sets up. When this occurs the patient's milk should be peptonized or broths and meat juice used, and the diarrhea allowed to continue unless it becomes remarkably excessive. It is also seldom necessary to give drugs to procure sleep in these cases. Bromides, chloral, hypnotics, and sedatives are worse than useless. The patient's stomach is the stronghold of defense, and it should be reserved for that sort of ammunition which is most valuable in the battle. It is true that brains are much more expensive and much more rare than drugs, and that good nurses are not always obtainable, and hence the skilled nursing which will secure sleep to the patient may be lacking, but even then it is better to push the use of alcohol than to resort to sedative and hypnotic drugs.

Davis cannot too strongly emphasize the mistake of repeated intra-uterine manipulation. But a short time ago, in consultation, a practitioner was strongly urged to abstain from uterine medication or treatment in a septic case. The patient's temperature soon fell, and she began to recover. Worst of all and most dangerous is the use of mercury bichloride within the womb. Abundant and repeated evidence is available of the danger of this method of treatment. When the uterus is emptied, lysol 1 per cent, creolin 1 per cent, or normal salt solution should be chosen. The author has seen no case, nor has he found in the literature a case in which iodoform poisoning has occurred from the use of iodoform gauze within the puerperal uterus. At present we cannot consider this use of iodoform as dangerous or improper.

With our present knowledge we may hope for improvement in the prevention and treatment of puerperal septic infection in the following directions: Gradual increase in knowledge among the laity regarding the nature of infectious diseases and efforts which should be made to prevent them. At the present time two factors combine to prevent the lessening of septic infection: one is the ignorance and carelessness of the laity who consign obstetric cases to midwives and incompetent persons; the other factor results from this, and is the cheapening of obstetric work. Complicated deliveries are considered matters of course, and are expected to be done in a careless and inefficient manner, and are compensated accordingly. All obstetric operations are surgical procedures, and should receive the same compensation which surgical procedures of like nature demand. When they are so regarded by the populace and practitioners, there will be greater compensation for them and there will be more care exercised in their performance.

Among the poor, and those of small means, obstetric patients should be encouraged to go to hospitals for confinement. They may there receive the benefits of antisepsis, lacerations may be closed under favorable circumstances, and infection prevented. Private rooms at varying prices should be available; for obstetric patients whose cases demand especial attention should be encouraged to go to hospitals for confinement. Within the last few years a number of the writer's private patients have requested admission to private rooms in hospitals for confinement, although they had comfortable homes and were possessed of ample means.

Thorough diagnosis and examination during pregnancy will indirectly lessen the mortality of septic infection. The prevention of toxemia, the recognition and treatment of anemia, and the recognition and treatment of a previously infected condition of the genital tract are all of the greatest importance.

EXPERIMENTAL HEMOGLOBINURIA IN A CASE OF BLACKWATER FEVER.

In regard to this question, of constant interest to practitioners in malarial regions, Ross and Low contribute certain facts to the *British Medical Journal* of May 16, 1903.

Inability to take quinine is a bar to residence in highly malarious countries. Therefore, idiosyncrasy in this direction of quinine hemoglobinuria is a definite indication against return to malarial localities. When the patient (who is the subject of the following notes) declared that quinine always gave him black water, and the authors were requested to advise his employer as to his future for further service in West Africa, and as he expressed willingness to give a demonstration of the fact, his offer was accepted partly in his own and his employer's interests, and as an object-lesson for the students at the London School of Tropical Medicine.

T. R., aged twenty-five, English, last from the Gold Coast Colony, was admitted March 19, 1903.

Previous history: He went to the Gold Coast in June, 1901, and had his first attack of fever in January, 1902; it was not severe, and he was not laid up. He had three similar attacks up to September, 1902, and was always treated with quinine, 10 grains at a time, and also took this dose irregularly at considerable intervals as a prophylactic. In October, 1902, he had an attack of blackwater fever; the first symptoms led him to believe that he was about to have an attack of malaria. He took 10 grains of quinine at 5 P.M. one evening (he cannot remember the date), and about midnight he had vomiting, diarrhea, and frequent micturition. He noticed that his urine was black. He was attended by a doctor, who stated that his temperature at one time was 107°. He was in bed three days and was deeply jaundiced. The black water passed off in twenty-four hours, and he had no further attack in Africa, and arrived home early in March. On March 11, feeling chilly and feverish, he took 10 grains of quinine at 7 P.M., and at midnight diarrhea and vomiting set in, and he began to pass black water. All symptoms had disappeared in the morning. He consulted Dr. Manson, who sent him for observation and experiment to the Branch Seaman's Hospital in connection with the London School of Tropical Medicine.

State on admission: On March 19, 1903, temperature 99.6°; was anemic; spleen enlarged, not tender.

Blood examination: No malarial parasites; no pigmental leucocytes. Red corpuscles, 3,425,000; leucocytes, 10,000; hemoglobin (von Fleischl), 65 per cent.

Differential leucocyte count: Polymorphonuclear, 59 per cent; large mononuclear, 18 per cent; lymphocytes, 21 per cent; eosinophiles, 1 per cent; mast cells, 1 per cent.

On the following day the temperature was normal and he felt quite well. He remained so until March 23, when Dr. Manson decided to test his statement that quinine gave him hemoglobinuria. His blood was examined during the day and gave red corpuscles, 3,635,000; leucocytes, 7000; hemoglobin, 65 per cent. At 9 P.M. he was given the 10 grains of quinine by the mouth. He slept until 1 A.M., when he had a moderate rigor, nausea, and diarrhea, and passed a large quantity of black water. His temperature was 99° at 2 A.M. In the morning his urine began to clear, and by 7 P.M. was pale yellow, his temperature then being 98.9°. The examination of the black sample of urine showed one-third albumin, methemoglobin in crystals, and a few hemoglobin casts; the spectroscope also showed methemoglobin.

Blood examination, 11 A.M.: Red corpuscles, 3,000,000; leucocytes, 10,000; hemoglobin, 59 per cent.

Differential leucocyte count: Polymorphonuclear, 77 per cent; large mononuclear, 8 per cent; lymphocytes, 13 per cent; eosinophiles, 1 per cent; mast cells, 1 per cent.

This examination showed a loss of over a million of red corpuscles in a few hours.

On March 25 his anemia was marked and he was slightly jaundiced.

Blood count: Red corpuscles, 3,000,000; leucocytes, 11,800; hemoglobin, 57 per cent.

Differential count of leucocytes: Polymorphonuclear, 56 per cent; large mononuclear, 21 per cent; lymphocytes, 20 per cent; eosinophiles, 2 per cent; transitional, 1 per cent.

On March 26 daily hypodermics of 15 minims of Squire's arsenate of iron were ordered, and on the 27th euquinine 2 grains three times daily. His progress was favorable, but his blood regeneration was slow.

Blood count (March 30) was: Red corpuscles, 3,320,000; leucocytes, 6200; hemoglobin, 58 per cent.

He left on March 31 with instructions to continue iron and arsenic and euquinine for one month.

This experiment, deliberately planned and carried out, is one more proof that in some individuals under certain unknown conditions quinine produces hemoglobinuria. The antecedents of the case seem to indicate that the conditions which led to the formation (so to speak) of the hemoglobinuria idiosyncrasy were brought about by neglect of the use of quinine in the earlier stages of what may have been a special form of malarial infection, and the consequent development of an intense and peculiar cachexia.

A CONVENIENT METHOD OF ADMINISTERING QUININE SUBCUTANEOUSLY.

AUFRECHT *(Therapeutische Monatshefte,* February, 1903) recommends the following preparation of quinine for subcutaneous injection:

℞ Quininæ hydrochloratis, 0.5;
Urethani, 0.25;
Aquæ destillatæ, 5.0.

Urethane increases the solubility of quinine, and hence its use does away with the necessity of injecting large quantities of fluid into the tissues. Aufrecht obtained as good results from the use of the above solution as with a simple solution of quinine in 34 parts of distilled water.

SOME FURTHER USES FOR PICRIC ACID.

MILWARD contributes to the *British Medical Journal* of February 1, 1903, a paper with this title. He points out that the merits of picric acid in the treatment of burns are now so well known that it is surprising that its use in other surgical conditions has not received greater recognition. The lesions in which it is particularly helpful are those in which the loss of superficial epithelium has produced a raw and painful sore, discharging serum and sero-pus. This "weeping" surface is best seen in acute eczematous conditions, but it is also very noticeable after slight traumatic abrasions. From the length of time that these take to heal, they may easily become infected, and produce a lymphangitis and its sequelæ. Picric acid, which is a coagulant and an analgesic, is a simple and effective remedy, and promotes rapid healing. It is best used as a saturated solution, 1 in 95, of distilled water. The rationale of the treatment seems to be the formation of a pellicle of coagulated albumen over the wound, and so the protection of the ruptured superficial lymph spaces and exposed nerve endings.

Should active inflammation be present, there is danger of confining microörganisms under the protective coating, and of giving rise to further inflammatory trouble. The author tried picric acid in many lesions, and finds that in acute eczema, for instance, where pus is actually present, it is not a suitable remedy. An example of this was the case of a young soldier in whom a wound on the back of the hand had caused an acute eczematous condition to break out. After mopping away all visible pus, the author applied picric acid. The result was a lymphangitis and development of a small abscess in the forearm. Picric acid must therefore not be used indiscriminately.

Cavelli claims that it is of use in erysipelas, lymphangitis, eczema rubrum, and erythema; and Allen speaks of good results in ulceration and eczema of the legs, recent wounds with much loss of skin, and in capillary and hemophilic hemorrhage.

It is, however, to its use in the very minor and trivial cases of loss of superficial epidermis, and in cases of quite superficial infection, that our attention is called.

A troublesome affection of the fingers, which is especially prone to occur in dressers, house surgeons, and practitioners who come much into contact with pus, is a perionychia affecting the roots of the nails. It usually arises as a redness and tenderness of the soft parts overlying the lunula and sides of the nail. If the

free margin of the soft tissue where it extends over the base of the nail be separated from the latter, a bead of pus will exude and a little cavity be discovered, where this has been confined. Wet dressings appear to encourage the suppuration, and dry dressings cause the pus to become still further pent up, until very frequently it will burrow under the very root of the nail and attain its deep surface. Here it is still more difficult to reach. This trouble may be speedily cured by a little attention and the use of picric acid. By the aid of the head of a large needle (a probe is too thick) the soft parts are thoroughly separated from the nail. A few threads from plain white gauze, or a wisp of cotton-wool, are then soaked in a saturated solution of the acid, and pushed to the very bottom of the cavity. The soft parts and the root of the nail are thus kept entirely separate by this application, which should be renewed about three times daily. If this is done pain, inflammation, and discharge rapidly subside, and the further destruction of the young nail in its bed by the pyogenic organisms is prevented.

The writer has also found the remedy to be of use in the treatment of soft corns. Two or three applications will quickly dry them up, and render them painless.

Ingrowing toe-nail may be successfully treated by excising the offending sharply pointed corner of the nail which is digging deeply into the ulcerated soft parts. Picric acid freely applied will subsequently harden and render the latter insensitive, and it is scarcely ever found necessary to remove the nail as a whole.

In some cases that form of eczema known as intertrigo will be greatly benefited by the acid, and particularly good results have been obtained by the author by applying it to this condition when affecting the interdigital clefts of the toes. It is, however, more suitable for adults than children.

Treatment by dry powders—such as zinc oxide, starch, boric acid, and iodoform—are equally useful in some of these affections, but they have more tendency to form a crust under which pus will subsequently form. Picric acid has more antiseptic and penetrating qualities, and if the lesion is quite superficial, will completely rid it of offending organisms. At the same time, unlike other antiseptics, it appears to cause no irritation to the tissues. Its only drawback is the deep staining it produces. When used at all it should be applied very thoroughly, the acid being renewed frequently until the coagulated lymph completely covers the sore. The writer usually places a well-soaked lint on the wound and covers this with non-absorbent wool or gutta-percha tissue. The dressing may be left on from twelve to forty-eight hours, according to the asepticity of the original wound.

These few remarks may possibly suggest the use of this remedy in other and similar lesions.

TREATMENT OF PUERPERAL FEVER.

BACON, of Chicago, in the *Journal of the American Medical Association* of April 18, 1903, thinks that a suitable curette properly used may be of great value in removing mechanically the contaminated decidual and placental débris. The proper construction of the instrument is determined by a consideration of its dangers. The chief objection to it is the danger that it may perforate or injure the uterus. To avoid this danger it should be of ring or loop shape, and the shank should be sufficiently flexible so that it will bend before it penetrates normally resisting living uterine tissue. One edge of the ring must be sharp enough to cut soft tissue. Such a curette in the hand of one who recognizes its dangers is fairly safe. The surface of the uterine cavity should be carefully gone over with this instrument while the irrigation washes away all débris removed. The application should be so thorough that it need not be repeated. So used, once for all, the curette has its place, and a valuable one, in the treatment of sapremia.

After curetting should the uterus be tamponed? The common idea that a tampon is a drain is incorrect. It is rather a plug which stops up the cervical canal. An intra-uterine tampon stimulates the uterine contractions and its circulation. In this way it helps in the shedding of adherent pieces of decidua and placenta which come away with the tampon on its removal. These facts established by clin-

ical observations determine the rule for the employment of a tampon. When a curettement can be done thoroughly, so that all débris is certainly removed, omit the tampon. When it is impossible to curette thoroughly or even at all on account of weakness of the patient or lack of anesthetics, or for other reason, tampon the uterine cavity with sterile gauze, which should be removed in twelve hours.

In the local treatment of true puerperal infection we have to rely on the same measures—drainage, irrigation, and curetting. The object of the curette is here, as in sapremia, to remove intra-uterine débris, which forms a good culture medium for the parasitic germs. A special danger pertains to its use in this case which should be considered. Nature combats the parasitic invasion by the establishment of an inflammation which is a preservative process. It consists essentially in the formation in front of the invading microbes of a wall of leucocytes whose function it is to destroy them and neutralize their poisons, and thus expel them or limit their advance. This opposition of nature will be successful unless the parasites are too numerous or too virulent or the resistance of nature too feeble. In this latter case no local treatment can help. In the former there is the danger from the curette that the instrument will break through the leucocytic wall and give the microbes a free passage into the vessels and tissues of the formerly protected zone. Hence in a true infection the curette should be used with unusual care not to wound healthy uterine tissue.

In a true infection drainage and irrigation remove the parasitic products as in the case of saprophytic disease. Some of the dangers of irrigation have been mentioned. Another danger in cases of puerperal infection is that of washing out thrombi from the veins and forcing the fluid into the circulation. For these reasons the usefulness of irrigation is limited.

This study of the conditions for the employment of these measures prepares the way for the practical rules to be observed in managing cases of puerperal fever as they arise. When the temperature of the puerperal woman rises above 100°, whether this rise be accompanied by a chill or not, we first examine the vulva and the introitus vaginæ. If this region be inflamed and gray patches appear where tears had existed, local application may be made as previously suggested.

If the vulva is normal we note the condition of the lochia. If it is offensive we diagnose a sapremia either alone or accompanied by an infection. If the lochia is scanty or absent when it has previously been free, we consider the lack of uterine drainage to be an important factor in the causation of fever. In this case we seek to reëstablish drainage, perhaps by massage of the uterus, or by changing its position, or by securing free catharsis. This last measure is, as we all know, very often efficacious. Sometimes, no doubt, the fever is due to intoxication from bowel contents, and this of course is best treated by securing catharsis. In other cases, however, a uterine infection is favorably affected by catharsis, and probably by the effect of the intestinal movement in starting up uterine drainage.

When the fever continues in spite of a thorough trial of these measures for twelve to thirty-six hours, we will have to consider the advisability of intra-uterine irrigation and curettement. If the lochia does not reappear in spite of our manipulations, we have good reason to attribute the fever to lack of drainage and anticipate favorable results from irrigation. When we know that the afterbirth came away complete there is less indication for curetting. If we see the patient first after the fever has existed for some time, and the probability is great that considerable intra-uterine débris is present, we should waste no time, but proceed at once to clean out the uterus.

SEASICKNESS.

In an article in the *Centralblatt für Innere Medizin* of February 28, 1903, on the cause and treatment of seasickness, Binz, of Bonn, expresses the belief that the rocking of the ship produces a narrowing of the arteries of the head, thereby causing a cerebral anemia, as a result of which nausea and vomiting occur. He believes that the stomach plays only a passive rôle in the vomiting, which

he considers to be entirely of central origin, as it occurs whether the stomach be full or empty. He also believes that the relief which follows vomiting is due to blood being forced to the brain by the straining incident to the act. As to remedies he claims that anything which causes a determination of blood to the brain will be of use. As a prophylactic measure he recommends a full meal about an hour before embarkation, and advises that the recumbent posture be maintained. Most drugs which cause a dilatation of the cerebral vessels should be administered during an attack of the malady, and of these Binz prefers chloral hydrate. He is of the opinion that amyl nitrite has only a limited range of application, as its action is fleeting and its use not entirely devoid of dangers. He would not use it in attacks of seasickness of long duration.

TREATMENT OF GASTRIC HYPERACIDITY (HYPERCHLORHYDRIA).

In the *British Medical Journal* of April 18, 1903, RUSSELL states that the treatment to be selected in such a condition depends upon the severity of the disorder and the history of the case, and he only attempts to discuss the general principles. In mild degrees, associated with constipation, the correction of this may be sufficient. In other instances an alkali taken some time before food neutralizes any acid residuum and facilitates the transformation of the starchy elements of the next meal. In other instances relief is obtained by the administration of even a small dose of an alkali as soon as discomfort begins. This has for some time been a clear practical fact, and it has now the support of Pawlow's work on the secretions of the digestive glands. The administration of acids in this condition has not been successful, although in some gastric disorders they have produced good effects. As regards diet this also has to be determined by the severity of the symptoms. In some cases the prohibition of the more common forms of starch, such as potato and untoasted bread, is sufficient; in others still greater care must be exercised in the selection of the most readily digested pure proteid diet, and the gradual addition to this of the most soluble carbohydrates available.

The author promptly gave relief to a young woman who had been sent to him with pain coming on an hour or more after every meal, and so severe that she was almost afraid to touch food of any kind. A couple of days on raw eggs, and then the gradual addition of suitable carbohydrate, gave complete relief. In the severest cases the removal of the gastric residuum seems to be the speediest means of temporary cure—temporary, because the author holds the condition to be a chemical dyscrasia, and not a neurosis, and permanent cure, or anything approaching it, can only be looked for from a dietary adapted to counteract or prevent the chemical dyscrasia manifesting itself.

The considerations determining the dietary are: (1) the proteids ought to be reduced to a physiological minimum, and ought to be so selected and cooked as to be easy and ready of digestion; (2) the starches should be as much altered as possible; (3) the quantity of food should not exceed the physiological requirements. Proceeding on these broad lines we may have every confidence in assuring our patients of recovery, and that continuance on the lines indicated will carry with them the reward of physical and mental well-being.

EFFECT OF IRON AND ARSENIC IN THE RECUPERATION OF THE BLOOD AFTER HEMORRHAGE.

That anemic conditions are benefited by the giving of iron and of arsenic needs no demonstration. Nevertheless, observations of such a scope as those recently made by BAUMANN (*Journal of Physiology,* February, 1903) are of value alike to the physician and the surgeon. In this research a quarter of the total blood in the body was drawn from a series of dogs, and subjected to examination as regards the specific gravity, rate of coagulation, number of red blood-corpuscles, number and variety of white corpuscles, and quantity of water, solids, ash, proteids, and hemoglobin. Some were then given inorganic iron (Blaud's pill, gr. 15, t. i. d.), others organic iron (a solution of

iron albuminate), others arsenic (liquor arsenicalis, 6 to 12 minims a day), and lastly, in two cases, the same quantities of iron and arsenic were given together. In four animals no drug was given. At the end of a week the blood was withdrawn and examined in each case in exactly the same way as before. The condition of the blood a week after the hemorrhage in those cases in which no drug was used formed a standard of comparison. When iron in an inorganic form was given the deterioration produced by the loss of blood was considerably lessened, and the hemoglobin was even increased above its original value. With the albuminate of iron similar but less striking results were obtained. Arsenic alone produced little effect, while iron and arsenic together were found to give optimum results both as regards the number of the corpuscles and the solids of the plasma, while the proportion of hemoglobin was but little less than normal.—*British Medical Journal*, April 4, 1902.

THE TREATMENT OF RINGWORM.

JACKSON in the *Medical Record* of April 11, 1903, gives the following advice as to the treatment of ringworm, and his reputation as a dermatologist makes his opinion valuable: Ringworm, like the poor, we have always with us. No matter where a doctor's work may lie, whether in the city or in the country, if he is in general practice he will sooner or later be called upon to treat ringworm. There are few diseases of the skin easier to cure than ringworm of the so-called non-hairy parts of the body. Sulphur, iodine, salicylic acid, mercury—any one of these in ointment or lotion will cure it. Indeed, most of them are not brought to the doctor, but cured by means of domestic remedies. While it is easy to cure ringworm of the non-hairy parts, it is difficult to cure ringworm of the scalp and beard, especially the former. In many communities a case of ringworm of the scalp will float around from one doctor to another, and will persist in spite of their best endeavors. No conscientious physician will promise them a speedy cure. If the patient is well in six months or a year the doctor can congratulate himself upon his success.

To a certain extent this is true of ringworm of the beard—barber's itch. While it is by no means as intractable as is ringworm of the scalp, still six months is often necessary for a cure under most methods of treatment.

The reason for the intractability of ringworm of the scalp and beard is that the fungus grows down into the hair follicles, and it is very difficult to make our well recognized antiparasitics penetrate to the seat of the trouble without damaging the skin.

The author does not detail the many methods of treatment with which all are more or less familiar, but commends one that he has used for some years with excellent effect, and asks that it be given a trial.

In looking for an excipient that would penetrate easily and be bland, goose grease occurred to him as probably just what he wanted. Many who have been brought up in the country will remember how our mothers used to rub our throats and noses with goose grease when we had a cold, in the belief that "it would loosen up the phlegm."

The author found it a most effective remedy for ringworm when a drachm or more of the crystals of iodine was added to the ounce of goose grease.

At the Vanderbilt Clinic, New York City, where there are many cases of ringworm, this preparation has been used extensively for two or three years, almost exclusively after the first few months, when it was found to be more efficacious than other remedies. It is to be applied twice a day until it produces reaction, as shown by a little swelling of the patch. Then once a day will be sufficient. In two or three weeks the hair falls out of the patch, and it becomes bald, like a patch of alopecia areata. After a time the hair grows again, and the patch is well. The first applications are apt to be a little painful for a few moments, but after that even little children do not complain of pain. No epilation is necessary.

When used on the bearded portions of the face the applications are more painful than when the scalp is the part treated. If much reaction with swelling is caused the

use of the remedy can be suspended for a few days, and a salicylated oil of three-per-cent strength can be used. As soon as the reaction subsides the remedy should be used again. The result in this form of ringworm is remarkable. Dr. Dade, who has charge of one of the classes for men at the Vanderbilt Clinic, states that it took just three weeks to cure barber's itch with this preparation, as he had noted in many cases. This coincides with the results in the author's private practice, who adds just one word of caution: Be sure to obtain the genuine article. It has been said that the goose grease dispensed by many druggists has never seen a goose, but is manufactured of several fats which, like goose grease, melt at low temperature. There are some good samples on the market. The finest variety is expensive, as it is made from the fat of uncooked geese.

Occasionally an obstinate case will be met with that will not yield to this treatment. In such a case good results have been obtained from the use of an ointment composed of half a drachm to a drachm of croton oil to the ounce of sulphur ointment. After a few days it will cause a good deal of dermatitis, and convert the patch into a perfectly bald one. Eventually the hair grows in again and the disease is cured.

SOME RECENT ADVANCES IN OCULAR THERAPEUTICS.

In the course of an article in the *Medical Press* of March 25, 1903, SHAW reminds us that among the numbers of new drugs to which enterprising chemists have lately introduced us are some which make special appeal to the ophthalmic surgeon. Of these a few have stood the test of trial in every-day work, and while they will not entirely displace any old and well known favorites, still they seem worth adding to the rather small list of drugs to which we have frequent recourse in eye work.

Adrenalin, or extract of suprarenal capsule, in the 1-in-1000 solution supplied by Parke, Davis & Co., is familiar to most of us, as it has been used in many departments of practice. In eye work it has two distinct uses: one is to blanch the conjunctiva and so lessen bleeding in operations involving the cutting of that membrane, such as tenotomy for strabismus or plastic operations on the lids; the other use is to reduce great conjunctival injection and so promote absorption into the eye, which the injection greatly hinders. In this way cocaine or atropine may be got to take much greater effect on an acutely inflamed eye than it otherwise would.

Acoïn is a less well known drug. It is related to caffeine and theobromine, and in one-per-cent solution has marked anesthetic effects on mucous membranes. Its chief use in eye work is as an addition to solutions for subconjunctival injections, of which it greatly lessens the pain. It does not keep well in solution and seems to lose its effect.

Cuprol, an organic salt, is meant to replace sulphate of copper. The author has only recently obtained it, and cannot report on it yet, but Mr. Snell, of Sheffield, speaks so highly of it that he means to give it a good trial.

Euphthalmine is perhaps the most valuable of the recent introductions. It is a synthetic product nearly related to beta-eucaine, but differing entirely in properties, being a mydriatic without any power of causing local anesthesia. If two drops of a five-per-cent solution is dropped in the eye, maximal dilatation of the pupil is brought about in thirty-five minutes, without any appreciable weakening of the power of accommodation, the patient being able to read as usual. There is no raising of tension, and it can be safely used even in glaucomatous cases, where one dare not use any other mydriatic. The effect passes off in two to four hours, and it is this safety and rapidity that makes it so valuable for ophthalmoscopic work. Cocaine is very uncertain as a mydriatic, and may affect accommodation; homatropine and atropine both raise the tension of the eye and may bring on acute glaucoma in a person predisposed to it. The effect of homatropine lasts twenty-four to forty-eight hours, and atropine ten to fourteen days. Euphthalmine is then much the most satisfactory mydriatic when we wish to dilate the pupil for ophthalmoscopic examination with the smallest possible disturbance of

vision. The only disadvantage is its expense; it costs seventy-five cents per gramme, or about a dollar and twelve cents per ounce in five-per-cent solution. This seems dear, but as one need only use one or two drops in each eye, it only costs a fraction of a penny for each application. It acts well in weaker solution if combined with cocaine, 0.5 per cent of each, but on the whole the author prefers the simple solution as being less likely to affect accommodation and tension.

THE IMPORTANCE OF ATTENTION TO THE MOUTH AND TEETH BEFORE AND AFTER OPERATIONS UPON THE PELVIC VISCERA.

MacNaughton-Jones in the *Medical Press* of March 25, 1903, writes of the importance of oral cleanliness prior to pelvic operations. As he well says, anything that is likely to complicate recovery from a pelvic or abdominal operation is worthy of attention. This may appear a truism, yet it is unfortunately the fact that occasionally we have to deplore a fatal result which arises, not from some apprehended cause such as unavoidable surgical calamity or complication, but from a trivial oversight or unlooked-for yet avoidable accident or complication, which greater forethought or watchfulness might have prevented. It is to the occurrence of such a sequel to a pelvic operation that the author briefly draws attention.

It is well known that even in health a great variety of microörganisms are found in the buccal cavity, such as the leptothrix sarcinæ spirilla, the pneumococcus of Friedlander, the bacterium gingivæ pyogenes, the bacterium termo, the pseudodiphtheritic bacillus, and less frequently the staphylococcus albus and aureus, the streptococcus pyogenes, and the bacillus coli communis. This is only part of a list of microörganisms which, according to Miller, frequently number a hundred and forty million in an unclean mouth. Fortunately, the old saying is true of all these deleterious organisms—"these fleas have other fleas"—and to this microbial cannibalism we owe the immunity from septic influences under ordinary conditions rather than to the weak bactericidal effects of the saliva. But we must further remember that these microbes may secrete ferments and produce alkaloids, the same microbe possibly having the property of producing both, and toxic ptomaines be also formed from these pathogenic organisms. How far the swallowing of such infective germs, if they be not destroyed by the gastric secretion and reach the intestine, infecting the intestinal tract, indirectly favor septic changes in wounded tissues, especially in those in close proximity to the bowel, we cannot say. That they may do so, and occasionally do, appears to be certain, That they must directly cause various gastric troubles is equally true. When the general health is affected and the buccal cavity is itself involved by an acute or chronic constitutional disorder, the virulence of such organisms is increased. By disordered states of the stomach, the nasopharyngeal tract, the teeth, tongue, and buccal mucous membrane, this increase in virulence is likely to be produced. The mouth then becomes a generating microbial incubator, in which fermentative, putrefactive, and infective action are rife. The bacterium termo, which we have noticed as being present, is known to be one of the most active agents in bringing about putrefactive changes. The affection pyorrhea alveolaris, in which a pus pocket forms between the alveolus and the root of the tooth, and which is attended by softening with purulent exudation from beneath the gum, is commonly known to all dental surgeons.

In a valuable series of articles which appeared in the *Clinical Journal* (March and April, 1899) Mr. Fitzgerald discussed the etiology, pathology, and treatment of this affection. Among the predisposing causes, besides syphilis, tubercle, and scurvy, he mentions the exhaustion of acute infectious disease, or any other source of malnutrition. The gingivitis is accompanied by streptococcus invasion and putrefactive organisms, with decayed food remnants, which with the associated pus are swallowed, and act locally on the stomach wall, originate gastric fermentation, and initiate processes which are the result of the absorbed toxins generated in the mouth.

A woman under the author's care for

rectovaginal fistula, which was cured by operation, and on whom he subsequently performed amputation of the cervix, consulted him on different occasions for most severe ulcerations of the buccal mucous membrane, and the inside of the lips and tongue. Pseudodiphtheritic patches, extending deeply into the tissue, and most difficult to heal, recurred from time to time, notwithstanding that the teeth had been attended to and all carious stumps removed. He had ordered two or three bacteriological examinations made of scrapings from the membranous exudations, and each time the staphylococcus and streptococcus were present with other organisms. Recently, though she has been for a few years free from an invasion, she has had another and milder attack on the inside of the lip. At the time of the first attack the sockets of all the incisor teeth were infected; these were attended to by her dentist, and peroxide of hydrogen was injected.

The lymphatics of the salivary glands, and those of the mouth communicating with the superficial and deep cervical glands, may carry infective organisms to these latter. Should there, at the time, be any slight abrasion of the buccal mucous membrane, the infection may thus directly reach the circulation.

THE TREATMENT OF TERMINAL COMA IN DIABETES.

ELLIOTT writes in the *New York Medical Journal* of April 4, 1903, in regard to the causes and treatment of this serious condition. First of all, the author emphasizes his belief that the rigidity of the diet should be relaxed, for we may no longer hope to overcome the glycosuria by dieting because the carbohydrate molecule of the breaking-down albumin will perpetuate it. The patient may have as much bread, green vegetables, and potatoes as he likes, providing his wants be not too immoderate. He should be protected against all disturbing influences, from fatigue and cold. Our next paramount duty is to stimulate elimination so as to promote the excretion of toxins, and by this means prevent their accumulation to a dangerous degree. The patient is encouraged to drink as much water as possible, laxatives are administered, and copious colonic irrigations with normal saline solution should be given daily. Meanwhile, if any sedative or narcotic drug is being taken, it should be at once discontinued. The author believes in the administration at this stage of simple alkalies such as sodium bicarbonate in doses which do not interfere with gastric digestion.

When the prodromes of coma appear, the patient must immediately be put to bed, a stimulant given, and if the heart is weak, a good-sized dose of digitalis had better be administered subcutaneously. If the bowels have not been previously well evacuated, a laxative is given and a high soap-suds enema for cleansing purposes resorted to. Alkalies, which are the physiological antidotes of the acid toxins, should be at once begun in enormous doses, as much as it is possible to get the patient to take, and normal salt solution charged with sodium bicarbonate may be used freely by bowel and subcutaneously. In desperate cases the alkaline solution (Lepine dissolves 7 grammes of sodium chloride and 10 grammes of sodium bicarbonate to the liter of water) may be directly injected into a vein, but this method offers little advantage over the digestive and subcutaneous routes. Oxygen may meanwhile be administered freely by inhalation.

By means of such measures as these, if we are to believe the reports of excellent authorities, a few cases have been benefited, and even temporarily rescued from the deepening coma. Such an outcome is unfortunately too rare to justify any modification of the unqualifiedly bad prognosis in such cases.

THE ADMINISTRATION OF CALCIUM SALTS IN NEPHROLITHIASIS DUE TO URIC ACID CALCULI.

To the *Journal of the American Medical Association* of March 28, 1903, CROFTAN contributes an article in which he concludes that:

1. The uric acid of the urine is held in solution by di-sodium phosphate and is precipitated (salted out) by mono-sodium phosphate.

2. For the prevention of uratic calculi

the increase of di-phosphate and the decrease of mono-phosphate is, therefore, a desideratum. This object can be accomplished either by decreasing the phosphoric acid or by increasing the sodium of the urine.

3. Calcium salts produce the desired effect by decreasing the excretion of phosphoric acid through the kidneys: (*a*) By binding the preformed phosphates of the food and preventing their absorption; (*b*) by binding the phosphates of the blood and causing their elimination through the bowel.

4. The administration of sodium salts that can also produce an increase of the di-phosphate and a corresponding decrease of the mono-phosphate is to be condemned, chiefly because sufficiently large doses render the urine permanently alkaline. This deleterious effect is not produced by the exhibition of calcium salts.

The best calcium preparation is the carbonate; this may be given in doses of fifteen to twenty grains three times a day. More may be given with impunity. Von Noorden advises as much as fifteen grammes a day, and claims never to have seen any bad effects even after months of this treatment. It is necessary to individualize—the smallest efficient quantity of any drug is always the best dose. The urinary calcium, phosphorus, and uric acid excretion should be determined in the beginning (the patient being on a fairly constant, nuclein-free diet) and the dosage regulated accordingly.

A more convenient form of administering calcium, and one that is preferred by most patients, particularly if the treatment is to be carried out indefinitely, is to give calcium in the form of natural mineral waters or as an addition to some pure water. Among the better known European mineral waters Contrexèville, Wildungen, and Fachingen contain the largest proportion of calcium salts. Among domestic waters the choice is difficult. Exploiters of the majority of them make such blatant and extravagant claims in regard to wonderful cures that it is not safe to place any reliance on this essentially commercial propaganda. Personally, the author prefers adding the necessary amount of calcium salt or lime water to some pure water; for the "curative" value of most natural and artificial mineral waters depends more on the water than on the salts they contain. Abundant water-drinking is in itself indicated in urolithiasis, as any dilution of the urine must needs counteract the tendency to urate concretions. That the diet should in addition be so regulated as to lead to the smallest possible excretion of uric acid need hardly be emphasized.

It is important to determine that the calculi or the "gravel" passed are really composed of uric acid or urates, and not of other possible substances. The following method is rapid and easy of execution:

The concretions are finely powdered. A portion is treated with dilute cold hydrochloric acid in a test tube; if effervescence occurs the concretion contains carbonates, and if it dissolves it is not a uric acid stone. If nothing or only very little of the material goes into solution, the residue is treated with a large quantity of warm dilute HCl. Any residue is presumably uric acid for the sulphates and oxalates of lime; the phosphates, cystin, and xanthin all go into solution. The residue is filtered off, dried, and heated on a piece of platinum foil; a distinct odor of bitter almonds (HCN) speaks for uric acid. Finally, the murexid test may be performed as follows, in order to render the diagnosis certain: A small quantity of the material is dissolved in nitric acid and a few drops of the solution evaporated in a porcelain dish; the residue should be red—it should turn purple when touched with a drop of ammonia, and reddish-blue with a drop of potassium or sodium hydrate.

The author reports four cases; they present no clinical features of sufficient intrinsic interest to merit chronicling in detail. The only noticeable fact is that all four were advised by him several years ago to use calcium salts continuously; that all four were lost sight of for periods varying from two and a half to four years; and that all four recently again came under observation for other causes without having suffered a recurrence of their attacks of renal colic during the whole intervening time. Several other cases the author has lost track of, but hopes to rediscover.

Von Noorden, who first advocated the

use of calcium salts in nephrolithiasis, reports only two occurrences of renal colic among twenty-one cases. In one patient an attack occurred a few days after beginning the treatment; in another patient who had suffered from severe attacks every few weeks, an attack developed nine months after the treatment was begun, and not again thereafter.

The good results obtained in the author's four cases and the statistics of Von Noorden lead him to the belief that the treatment of uratic nephrolithiasis by the continuous exhibition of calcium salts is efficacious and deserving of extended trial.

THE TREATMENT OF SMALLPOX BY THE SERUM OF IMMUNIZED HEIFERS.

THOMSON and BROWNLEE contribute to the *Lancet* of April 4, 1903, the results of a large number of cases in which they used the serum of immunized heifers in the treatment of variola. While the results were of interest they were not noteworthy because of their success.

An analysis of the different cases cited by the authors shows the following: (1) No action of any kind was observed in the hemorrhagic cases treated with serum. In two cases, as the serum was administered only twenty-four hours before death there was probably too little time for it to exercise any influence; but in the third case, where the patient died a week after the injection, there was probably sufficient time for the influence of an immunizing agent to become apparent had the serum contained such a substance in sufficient amount. (2) In certain cases in which the serum was administered from eight to eighteen days before death or commencing desiccation no influence whatever seemed to be exercised upon the course of the disease, though in these there was ample time for the serum to act. (3) In the remaining six cases the serum was administered from four to seven days before desiccation commenced. In all of these the course was modified and there was probably sufficient time for the serum to exercise an immunizing influence, but as all, with two exceptions, were undoubtedly vaccinated, and as these two were probably vaccinated, it is impossible to determine whether the modified course resulted from the primary vaccination or from the treatment. (4) The thirteenth case shows that the serum completely failed to modify the course of a revaccination. (5) It is possible that the eruption which appeared on the eighth day after the serum was administered may have been due to the presence in the serum of some agent identical with, or closely resembling, substances present in the blood of various patients. (6) That the serum in the thirteenth case did exercise some influence upon the tissues, though none so far as could be determined on the vaccination, is suggested by the development of the cutaneous erythema on the eighth day after the administration of serum was begun. We may observe here that the characters and distribution were precisely those so frequently present in the erythematous and some other of the prodromal eruptions so commonly found in variola and varicella, and exceptionally after vaccination. This suggests that some active body may be present in the serum in sufficient quantity to produce a distinct reaction in the absence of variola—that is to say, when the individual has not been immunized by passing through the earlier stage of smallpox against the toxins presumably present in the serum.

ETHYL CHLORIDE AS A GENERAL ANESTHETIC.

To the *Lancet* of April 4, 1903, MCCARDIE reports his conclusions arrived at after using this anesthetic in a large number of cases. He states that the general opinion of operators in London who have had experience with it seems to be favorable. Mr. F. Marsh, in his recent Ingleby lectures, says that "on the average about two minutes of anesthesia and analgesia was obtained in twenty cases of his, and that its advantages over 'gas' are the longer time given and the absence of congestion and cyanosis. Recovery from its influence is quite rapid, and the patients are able to walk back to bed. No troublesome after-effects occurred in my cases." It has been claimed for ethyl chloride that the condition of analgesia persists for an appreciable time after apparent return of consciousness. This condition, it is

judged, lasts after short operations for about from a quarter to half a minute or so after apparent return of consciousness, and is much more marked than in the case of nitrous oxide.

It has been said that with ethyl chloride it is impossible to obtain full muscular relaxation, and hence the uselessness of the drug for reduction of fractures and other operations needing full muscular relaxation. With rare exceptions, however, with full anesthesia the muscles are flaccid, though in one or two cases rigidity has persisted for a few minutes afterward, and in one case of operation on the foot full muscular relaxation was not secured until a lapse of about eight minutes. The same thing occasionally happens with ether.

The after-effects noted by the author are headache and sickness and one very doubtful case of syncope. Headache is not very common, and in a case of twenty-six minutes' duration was only slight and lasted for about half a day. Sickness is decidedly more common and persistent than it is after nitrous oxide. Many patients, particularly if unprepared, vomit once on coming round. It has been claimed by some foreign observers that the after-effect of ethyl-chloride narcosis is usually a feeling of well-being and even of hunger. The patients are able to eat within one or two hours after an ordinary administration. During recovery, particularly after short operations, the patient is rather more "fuddled" than after nitrous oxide, and any injudicious noise, talking, or restraint may lead sometimes to excitement, rarely forcible, for a minute. Marshall, in some fifty cases, noted two charges of indecent assault brought by patients as the noteworthy after-effect. Vomiting has only been severe in four of the author's cases. In the first one, a woman aged sixty-seven years, who had an aural polypus removed, vomiting did not begin till six hours after the operation, but it continued for twelve hours. The second patient was a delicate, nervous girl, to whom ethyl chloride was given for an operation on the os calcis, lasting nine minutes. Afterward she vomited at frequent intervals for thirty hours, until she was given some albumen water, which, it is supposed, often lessens or stops postanesthetic sickness. This patient some months afterward had ether, preceded by a little chloroform, for a second operation, and was again just as sick. In yet another occasion there was severe vomiting after another anesthetic. In this case, then, it would seem that there was exceptional nervousness or stomachic sensibility. In a third case, that of a boy aged thirteen years, who after proper preparation was anesthetized for two minutes during operation on the foot, after-sickness and vomiting lasted for twenty-four hours. He was given chloroform on another occasion, and was then just as sick. The fourth patient, a youth aged seventeen years, was given ethyl chloride, after the usual preparation, during four minutes for tenotomy and movement of the foot. He was sick for twelve hours. It is certain that the tendency to after-vomiting is much less than is the case with chloroform and ether, but is distinctly greater with nitrous oxide.

With regard to the danger of ethyl chloride the author has seen none directly associated with it. There has been no such thing as syncope, respiratory or cardiac. The only difficulties noted have been in mouth operations, and were due to obstructions to respiration from blood in the throat or falling back of the tongue, and were overcome by simple mechanical means. Cases of asphyxia and syncope have been described abroad.

Lately there has been used in France and advocated in this country by Dr. Rolland, of Bordeaux, a compound preparation called "somnoform." It is composed of 60 parts of chloride of ethyl, 35 parts of chloride of methyl, and 5 parts of bromide of ethyl. Its composition was decided by theoretical considerations, with a view to secure simplicity, rapidity of action, and elimination and safety. It is claimed that the diffusibility of methyl chloride, which evaporates at 23° C., tends to quickness of action, while the chloride of ethyl prolongs anesthesia, and the ethyl bromide causes an after-analgesic state. This mixture was tried in eleven cases, and no practical difference in its action from that of ethyl chloride was found. The chief objection to ethyl bromide is that it causes an unpleasant garlicky smell which pervades the room,

and also subjectively persists in the patient for one or two days afterward.

Ethyl chloride would appear to be particularly advantageous in many short operations lasting up to ten or fifteen minutes. Fromaget recommends it as preferable to chloroform in eye work, especially in paracentesis, iridectomy, periotomy, tenotomy, muscular advancement, enucleation, etc., and is particularly pleased with his results in operations on children. It has been used in gynecological and obstetric work, and also in large operations in general surgery. The author has administered it for operations, among many others, on the tibia, 17½ minutes; on the hand (an old woman, aged sixty-eight years), 18 minutes; for circumcisions, from 5 to 10 minutes; for drainage of the knee-joint, 10 minutes; for mammary adenomata and cysts, several cases; for enucleation of the eye, four cases; for strabismus operations, several cases; in an operation on an old sinus from the kidney, 18 minutes; and for excision of hydrocele, 11½ minutes. In the last case anesthesia was induced in half a minute, and was as good as with ether or chloroform. The patient recovered consciousness in from one and a half to two minutes after cessation of the administration, and the only after-effect was slight headache for a time. One hour after the operation he had pudding and milk for dinner. Thus the advantage here, as compared with ether or chloroform, was probably very great.

SPASMODIC TORTICOLLIS SUCCESSFULLY TREATED BY HYPODERMIC INJECTIONS OF ATROPINE.

Potts reports in the *University of Pennsylvania Medical Bulletin* for April, 1903, his experience with this plan of treatment. As he well says, the most obstinate, therapeutically, of the so-called functional diseases of the nervous system is spasmodic torticollis. While surgical treatment, which consists in cutting the affected muscles and the nerves supplying them—*i. e.*, usually the sternomastoid of one side and the posterior rotators of the other, and the corresponding spinal accessory and the first three posterior branches of the cervical nerves—is most frequently effectual, even it sometimes fails.

Before resorting, however, to surgical measures, medical treatment for various reasons may be deemed advisable, and a great variety of drugs and other therapeutic measures have been employed, all with some degree of success. Among these measures, which may be combined, can be mentioned absolute rest in bed with the head low; massage; passive movements; the actual cautery applied over the affected region and back of the neck; electricity; full doses of either gelsemium, conium, hyoscine, the bromides, the iodides, or atropine, the latter preferably hypodermically into the affected muscle. The use of atropine has been especially advocated by Leszynsky, who advises giving daily injections of the drug, beginning with about 1/120 grain and gradually increasing until the physiological limit is reached, which is sometimes as much as 1/6 grain. This method was used successfully in the following case:

Wm. B., aged thirty years, a tinroofer by occupation, presented himself, complaining of spasmodic torticollis which had persisted for a year. It had developed gradually, and was made worse by the use of any other muscles. The spasms were clonic, the point of the chin being drawn to the left and the head backward. He was unable to work on account of it. He was first given 1/100 grain of hydrobromate of hyoscine and 15 grains of bromide of potassium three times a day, and the galvanic current, the anode stabile over the affected muscle, was applied daily. After three weeks of this treatment, without improvement, the hyoscine and bromide were discontinued, and 1/200 grain of atropine was injected into the affected sternomastoid. This was done daily into this muscle and the back of the neck alternately, the dose being gradually increased, until in three weeks he was getting 1/45 grain, and was much improved. The electricity was also continued during this time. After this the atropine was stopped, and he was comparatively well for four months; there was then some return, and the treatment was then recommenced and was continued, although not daily, for three months. He then returned to work. One-forty-fifth of a grain was the largest dose this patient could take.

EXPERIMENTS IN DISINFECTION WITH FORMALDEHYDE GAS.

RAVENEL reports in the *University of Pennsylvania Medical Bulletin* for April, 1903, his conclusions reached from a series of experiments designed to determine the value of this means of disinfection. He concludes that formaldehyde gas well deserves the high place which has been accorded it as a germicide.

The employment of special apparatus for generation of this gas, while convenient, is not requisite for its successful application, and no one should be discouraged from using it by the lack of such appliances.

The germicidal action of formaldehyde gas is largely controlled by certain factors which are, as yet, imperfectly understood. Other things being equal, the most important of these are moisture and temperature.

Each operation must be controlled by the exposure of test cultures distributed in every portion of the room to be disinfected, and no operation is to be regarded as successful until all such cultures are proven to have been destroyed.

GENERAL PUERPERAL SEPTICEMIA TREATED BY INTRA-ABDOMINAL IRRIGATION WITH NORMAL SALINE SOLUTION THROUGH AN ABDOMINAL WOUND.

BURTENSHAW contributes to the *Journal of the American Medical Association* of April 11, 1903, his views as to this method of practice, with the report of a case. He sums up the points at issue as follows, after having described the large amount of fluid used by the intra-abdominal method, namely, constant irrigation for from half to one hour at a time on several days.

1. Was there danger of "drowning" the patient by introducing such great quantities of fluid into the abdominal cavity? This outcome was feared, and had the kidneys not begun to functionate almost immediately after the irrigation was begun, the author would have discontinued it at once.

2. Could not the same favorable result have been attained by intravenous infusion? So far as influencing the general systemic infection was concerned, the writer replies unhesitatingly in the affirmative, the opinion being based to some extent on recent reports of *lavage du sang* in streptococcic infection with a solution of formalin. In the cases reported, however, the author believes that the favorable outcome was due to dilution of the poison in the blood-current, and not to any germicidal influence exerted by the contained drug. The use of normal salt solution would have been attended by as good results.

With regard to the attendant peritonitis, it was undoubtedly the local action of the saline which cut short the inflammatory process, and which apparently prevented adhesion formation. The author is able to explain this action only on the theory that, as streptococcic infection having the uterus as a starting-point spreads to surrounding structures especially through the medium of the lymphatics, and as saline solution in the peritoneal cavity, as elsewhere, is primarily absorbed by the lymphatic system before entering the blood-current, the consequent attenuation of the toxins almost at the point of origin would necessarily follow. Then again, while the primary effect on the blood-vessels of hot water—that is, of water at a temperature ranging from 107° to 120° F.—is to cause dilatation, and consequent engorgement, through the governing nerve mechanism, the secondary effect is that of contraction and cessation of congestion. As congestion is a natural concomitant of irritation or inflammation, the effect produced by its disappearance is obvious. While this explanation appears plausible, we are compelled to ignore the fact that the peritonitic inflammation in this case was of streptococcic origin, and consequently of a type which would be the least likely to yield to any form of treatment.

As regards the non-formation of adhesions, it is natural to suppose that the inflammation of the peritoneum being held in abeyance and the surfaces being separated by the fluid, no opportunity would be afforded for such adhesions to occur.

3. Was there no danger of overstimulating the kidneys? This factor was before the author during all the time the treatment was being carried out. The

conditions under which the infusions were given made it impracticable to measure the quantity of fluid administered, and he had no means of knowing even the approximate amount absorbed. The urine collected was carefully measured at frequent intervals, and it was evident that the flow from the kidneys was almost constant from the beginning. It also seemed that such long exposure of the intestines to the action of water at a temperature of 110° F. might have a deleterious effect, but such did not prove to be the case.

It is to be regretted that bacteriological examinations of the blood were not made at intervals subsequent to the one made after the venesection. Two specimens were obtained for this purpose, but owing to an error were lost.

The satisfactory outcome is thought to have been in part due to the character of the fluid employed. Dr. Harvey Cushing has called attention to the fact that a solution containing 0.6 per cent of sodium chloride, that commonly employed, should not be regarded as a normal physiologic salt solution. He says: "As a matter of fact, this is a most misleading designation, if we mean to imply by the term a fluid which is isotonic with the body fluids, and thus one that may be used with impunity in large amounts to replace directly in the circulatory system the loss of normal blood serum. A 0.6-per-cent salt solution is, in the first place, sufficiently hypisotonic to take the corpuscles perceptibly if used in sufficient quantity; and furthermore, the recent observations of Loeb and his pupils have demonstrated the actual toxicity toward cellular activities of the pure sodium chloride solution —that is to say, when uncombined with other salts. . . . . Sidney Ringer, years ago, through an accidental observation, discovered the fact that minute doses of calcium and of potassium salts, when used in combination with the usual percentage of the sodium salt, made a solution possessing a much more beneficial effect in conserving the activity of an isolated heart than the sodium solution when used alone. Thus, for the first time, was pointed out the antagonizing action of small amounts of calcium and potassium toward the toxicity possessed by the single sodium ion, and thereby was given the first indication of the necessity of combining salines in order to obtain a more perfect infusion solution."

There can be no doubt that the pure sodium chloride solution alone may, in certain ways, be injurious from its toxic effects; that furthermore a solution of the single salt, as weak as the 0.6 per cent commonly employed, has a hemolytic effect on the red corpuscles. The desirability, therefore, of administering a fluid which shall be as nearly as possible isotonic with the blood—that is, shall have a molecular concentration corresponding to that of the liquor sanguinis—is evident.

THE MEDICINAL TREATMENT OF TUBERCULOUS PERITONITIS IN CHILDREN.

While we confess that we have no great confidence in the medicinal treatment of this condition we note with interest the views expressed in the *Archives of Pediatrics* for April, 1903.

GUTHRIE admits that we cannot claim at present to slay the tubercle bacilli within the body by any drugs or antitoxins. But the resolvent action of such drugs as mercury and iodide of potassium on tuberculous inflammations is open to discussion. Most of his cases were treated by mercurial inunction or by biniodide of mercury given internally, and recovered —whether in consequence of the treatment or not is a matter of opinion. Some got well without it.

Is arsenic of use in tuberculous affections? It is believed to cure some cases of lymphadenoma, and it is now well known that so-called lymphadenoma in children is frequently tuberculous. It would therefore be interesting to discover whether these are the cases in which arsenic is of value—for if so, arsenic might affect the course of tubercular peritonitis. It is used extensively in this country with this object.

The author knows of no other drugs which can conceivably have influence over tuberculosis, but by some guaiacol carbonate and iodoform are held in repute. Cod-liver oil, of course, is used systematically, but probably acts as food rather than as a medicine. Syrup of iodide of iron has a reputation, but it is doubtful

if it is superior to other preparations of iron, when arsenic is present. Medicinal treatment of tuberculous peritonitis is almost entirely symptomatic.

The chief symptoms which call for treatment are pain and abdominal tenderness, flatulency and indigestion, diarrhea or constipation, vomiting and ascites.

Pain is seldom marked in patients kept at rest in bed, unless it is due to the onset of acute septic peritonitis. The ordinary slight pains and tenderness can usually be relieved by local applications of belladonna, heated cotton-wool or spongiopilin, or in some cases by painting with iodine. Opium is seldom required.

Flatulency and indigestion need careful dieting and bismuth. Diarrhea needs no treatment in Guthrie's opinion. Indeed, in some cases it may even be salutary in reducing ascites. Bismuth and opium or aromatic chalk and opium powder are most useful remedies. Coto and various other astringents seem of doubtful utility. With the exception of biniodide of mercury, the author has little faith in so-called intestinal disinfectants. They seem more useful when added to the evacuations than when taken internally. Diarrhea when dependent on intestinal ulceration is most difficult to control. If the ulcers are situated low down in the bowel, irrigation and astringent or soothing enemata may be of service, but when situated high up such treatment is of little use.

A loaded rectum should be cleared out by enemata rather than by purgatives, but an occasional dose of castor oil, cascara, or compound licorice powder may be given unless evidence of ulceration in the shape of blood-stained, or black, offensive, and purulent stools is present. But it must be remembered that ulceration may exist without any such evidence.

It is a question for discussion whether in cases of ascites with constipation and scantiness of urine, but without evidence of ulceration, purgatives and diuretics are indicated. The author had one case which he treated in this manner for a considerable time, and the patient recovered. But this treatment is hardly to be recommended as a routine process.

Vomiting is seldom excessive unless signs of intestinal obstruction are present, and these call for immediate surgical interference. When due to gastric disturbance only, bismuth and hydrocyanic acid are the best remedies.

It is seldom necessary to feed a patient on fluids only, unless there is obviously extensive ulceration. The pyrexia present is rarely high enough to interfere with digestion, and harm may be done by restricting patients to the diet usual in enteric fever. One must, of course, keep indigestible substances out of the dietary. In one case fever and dangerous colic, following a diet including green apples, first drew attention to the existence of tuberculous peritonitis. Starchy and other foods which in excess tend to induce flatulency and fermentation must be given sparingly. Meat, fish, poultry, can usually be assimilated if carefully minced and prepared. Eggs, cream, milk, and butter may be freely supplied. In some cases of intestinal diarrhea a diet of raw or partially cooked meat seems efficacious.

THE NATURE AND SPECIFIC TREATMENT OF HAY-FEVER.

In the *British Medical Journal* of March 28, 1903, Sir FELIX SEMON reports the results of his investigations to test the efficacy of the method of treatment of hay-fever suggested by Dunbar.

Dunbar succeeded in isolating from the pollen of certain grasses a toxic substance which, when applied in very small quantities to the eyes or nostrils of people predisposed to hay-fever, had within a few minutes produced in a more or less marked degree the local symptoms characteristic of hay-fever, whilst the same quantity of the toxin when applied to the eyes or nostrils of persons not predisposed had remained without any effect. Further, he succeeded, by injecting the pollen of rye, maize, and several other grasses into the circulation of various animals (rabbits, goats, and horses), in producing an antitoxin which when applied to the eyes or nostrils of hay-fever patients in whom the local symptoms of hay-fever had been artificially produced by the previous injection of the toxin, immediately quelled the subjective symp-

toms, and after a few minutes caused retrogressive changes in the objective symptoms, produced by the toxin.

From Semon's experiments he thinks the following conclusions may fairly be drawn:

1. There can be no doubt that Professor Dunbar has succeeded in extracting from the pollen of certain grasses (maize, wheat, rye, anthoxanthum odoratum, agropyrum repens, cynosurus cristatus, etc.) a toxin which when instilled into the eyes or nostrils of people predisposed to hay-fever, produces in these parts the characteristic subjective and objective symptoms of the disease.

2. The toxin, when injected into the eyes or nostrils of people not predisposed, produced in the great majority of cases no symptoms whatsoever; but it certainly appears from the experiences of the author and others as if there were instances of transition in which, although the persons experimented upon never suffer from typical hay-fever, they are even more susceptible to the influence of the toxin than the ordinary run of people.

3. The effects of the toxin in people suffering from hay-fever are as variable in intensity as are the attacks of the affection itself, both with regard to the local and the constitutional symptoms.

4. Professor Dunbar's antitoxin certainly produced immediate disappearance of the subjective, and after a few minutes great amelioration of the objective symptoms.

5. The mixture in equal parts of a toxic solution (1 in 500) and the antitoxic serum suffices to neutralize the specific effects of the toxin.

6. The effects of the antitoxin appear in some instances to be sufficient to prevent a reappearance of the subjective symptoms, whilst in other instances repeated instillations of the antitoxin were required to produce ultimately the return to normal conditions.

It is hardly necessary to add that this can only claim to be a preliminary report on a very interesting and important subject. We are, as it were, on the threshold of facts which, if our expectations should be realized, would in many respects open a new era for the better understanding and more efficient treatment of a most troublesome and common disease. At the same time it cannot be too emphatically stated that all we know at the present time is not sufficient to build excessive therapeutic hopes upon, and this for the following reasons:

1. We do not yet know what the nature of the special predisposition is which makes one person react violently to the influence of both the natural pollen and of the artificially produced toxin, whilst it leaves another quite unaffected.

2. Whilst it may be justly hoped that it will be possible to produce an even more effective serum no guarantee can at present be given, nor do we know for certain whether it will be possible to produce such antitoxin in sufficient quantities to use it extensively. It may, however, confidently be hoped that such will be the case.

3. Whilst the antitoxic serum as at present produced quickly neutralizes the local effects of the toxin, it is impossible to foretell—and on this point the author insists very strongly—whether in cases of genuine attacks of hay-fever an even more powerful serum than that at present prepared, applied by way of instillation into the affected mucous membranes, or by subcutaneous injection or by internal administration, will arrest all the symptoms when once fully established, and even if it should do so, whether the effect will be lasting, or whether the symptoms may not return.

4. Finally, it is equally impossible to foretell whether by the prophylactic application of a very powerful serum we shall succeed in altogether preventing the actual outbreak of an attack in those specially predisposed.

Semon is in perfect accord with the original investigator in giving this strong warning against premature hopes which ultimately may not be fulfilled. At the same time there can be no doubt that Professor Dunbar has made a very interesting and important discovery, which it may be devoutly hoped, in the interests of many thousands of sufferers, will ultimately lead to the development of an effectual specific treatment of this very troublesome affection. Semon promises to give us the benefit of his further experience when anything new can be reported.

TYPHOID PLASMA FOR THE PREVENTION AND TREATMENT OF TYPHOID FEVER.

The *British Medical Journal* of March 28, 1903, calls our attention to the paper recently published under this title containing an account of the researches which Dr. Macfadyen, of the Jenner Institute of Preventive Medicine, has been carrying out partly in conjunction with Mr. Sydney Rowland. At the conclusion of that article reference was made to the general effects of a further communication made to the Royal Society by Dr. Macfadyen on March 12. It is interesting to give some details as to the nature of the experiments on which that paper was founded.

Preliminary experiments with the object of testing the typhoid cell juices for immunizing and other properties were made upon the monkey, which was selected as an animal most likely to furnish data of possible application to man. Subcutaneous injections of typhoid cell juice did not produce any general symptoms beyond a transient rise in temperature, whilst the material was quickly absorbed after each injection without any traceable local effect. In this manner doses of 0.5 to 1 cubic centimeter of the material were injected at intervals. An immediate result was the agglutination of the typhoid bacillus by the serum of the blood of the treated monkeys, whereas no such effect was produced by the serum of monkeys which had not been treated. This furnished useful evidence that the animals were under the influence of cell juices derived from the typhoid organism. The injections were repeated at intervals of three to four days, and after a lapse of four to six weeks the animals were bled. The serum obtained was then tested for immunizing properties. The test objects were (1) a virulent culture of the typhoid bacillus, and (2) the intracellular toxic juice of the same organism. A varying amount of the virulent bacilli and of their toxic cell juice was mixed with a varying quantity of the serum. The respective mixtures were then injected into the peritoneal cavity of the guinea-pig. The broth cultures of the typhoid organism used in the experiments were *per se* lethal doses of 0.1 cubic centimeter in five to ten hours. The typhoid cell juices were fatal in doses of 0.2 and 0.1 cubic centimeter in three to five hours, and in doses of 0.05 cubic centimeter in about twelve hours. The serum was thus treated for (1) specific antibacterial, and (2) specific antitoxic properties.

The experiments showed that the serum of the monkey, after injections of the typhoid cell juices, possessed antibacterial and antitoxic properties, inasmuch as the serum protected the experimental animals against the bacilli, also against an intracellular toxin obtained from them.

A simultaneous injection of (1) serum with the bacilli, and (2) serum with the toxic cell juice produced no lethal or toxic effects. The control animals, on the other hand, invariably succumbed.

To test the preventive and curative properties the serum from treated monkeys was injected into guinea-pigs, one injection being made in each instance, and the same animals received at an interval of twelve to twenty-four hours lethal doses of the typhoid bacillus and of its toxic intracellular juice respectively. The treated animals survived the test, while the control animals succumbed. It was therefore concluded that the serum had protective properties.

A third series of guinea-pigs received lethal doses of the typhoid bacillus and of its toxic juice respectively. The serum was then injected at various intervals into individual animals. It was found that the lives of the animals could be saved by one injection of the serum from a fatal infection or intoxication, even when half of the lethal period had elapsed in each instance. The serum, therefore, possessed curative properties.

From the experiments made upon the monkey Dr. Macfadyen concludes:

1. That by the injection of the intracellular juices of the typhoid organism into the monkey it is possible to obtain a serum with both antibacterial and antitoxic properties.

2. That such a serum possesses curative and preventive properties as regards the typhoid bacillus and an intracellular toxin present in the same organism.

It is believed that this research has afforded for the first time proof that, in

the case of one species of pathogenic bacterium, the intracellular juices of the organism, when injected into a suitable animal, give rise to the production of a serum which is both bactericidal to the organism itself and antitoxic as regards a toxin contained in its substance. How far such properties of the cell juice are shared by other pathogenic microbes must be the subject of further inquiry.

Further experiments are in progress to test the effect of the typhoid cell juices upon animals larger than the monkey in order that a greater amount of serum may be obtained conveniently, and tested quantitatively as regards its antibacterial and antitoxic properties.

CARDIAC PULSATIONS RE-ESTABLISHED AFTER DEATH.

KULIAKO (*La Semaine Médicale,* No. 2, 1903) states that he has been able to reëstablish pulsations in the heart of a child three months old, dead of double pneumonia. The heart was removed twenty hours after death, and was submitted to an artificial circulation with Locke solution; this is a saline solution containing the minor elements of blood, together with a quantity of dextrose. It was employed hot, and saturated with oxygen. After twenty minutes, feeble rhythmical contractures were observed, at first in the muscular substance, then in the right ventricle. Finally the heart began beating regularly, and this persisted for one hour. The author has repeated this experiment upon other human hearts thirty hours after death, and has succeeded in causing pulsations in spite of the formation of large clots in the heart.

THE MALIGNANCY OF JOINT TUBERCULOSIS.

PAINTER (*Boston Medical and Surgical Journal,* Jan. 8, 1903) believes that a so-called healed tuberculous bone lesion is a constant menace to its possessor, and proves his contention by a study of forty-seven cases. This is not in accord with ordinary text-book teaching, which leads us to believe that a large proportion of these cases get well with certain more or less crippling deformities. In a series of forty-seven cases the average interval which elapsed between the end of the treatment of the initial disease and its recrudescence was 12½ years, showing that figures as to a radical cure based upon a freedom from tuberculosis manifestation for a period of three to eight years are absolutely untrustworthy. These cases also show that the recurrence is usually at the seat of the old disease alone. This was noted in thirty-eight cases; in four the recurrences were purely metastatic. In five they were at the seat of the original trouble and elsewhere.

Traumatism is directly associated with the relapse in about twenty-five per cent of the cases.

The tendency in the treatment of tuberculous joint disease is toward more and more complete fixation in childhood, in recognition of the fact that deformities can be prevented more readily and healing of the local process can be more firmly established, the consequence of either of which means less likelihood of relapse.

Operations in adults are undertaken earlier and more radically because it is found that incision gives greater immunity from extension of the disease locally or systemically, even though the ensuing functional result may be less satisfactory than ankylosis in a good position might be. Moreover, diagnoses are made much earlier than was at one time the custom, and by means of tuberculin and the *x*-ray we can not only determine with certainty that we are dealing with tuberculosis, but where in the joint the lesion is situated. The author announces his conclusions thus:

1. Tuberculous disease tends to recur after apparent cure in a considerable proportion of cases.

2. This recurrence is most commonly a local one. Metastases are not common.

3. Trauma, direct or indirect, is frequently associated with the recurrence. Indirect trauma is probably the exciting cause of the recurrences, especially where partial ankylosis or deformity exists.

4. Patients who have suffered from bone and joint tuberculosis should be cautioned that they are not well when symptoms have ceased, and that reasona-

ble care must be exercised to avoid recrudescences.

5. Deformity and shortening should be corrected as far and as accurately as possible to lessen the chance of recrudescence.

6. Mechanical treatment, especially fixation, should be used in the acute conditions in childhood. Exploratory interference, where discretion is used, with a view to removal of isolated foci, is advisable in many cases in children, and is to be urged in the majority of the recrudescences, if seen early. Recognition of the fact that patients with hip disease, Pott's disease, and tumor albus have tuberculosis just as much as if they had phthisis, and should be treated accordingly, must be insisted upon.

THE PRELIMINARY ANESTHESIA OF ETHER NARCOSIS.

HOFMANN (*Centralblatt für Chirurgie,* No. 11, 1903) calls attention anew to a fact that has long been known and which has been utilized by surgeons, namely, that in the early stages of ether narcosis before consciousness is completely lost, and before the stage of excitation has fairly started, there comes a period when the patient is absolutely anesthetic, and when operations requiring but a few moments can be performed without causing pain. Moreover, the recovery from this anesthesia is almost as prompt as that from nitrous oxide, and although its duration varies in individuals it is never entirely absent. The sign of having reached this phase, which is accomplished by administering ether in drops, the patient breathing deeply, and which requires not more than two minutes, is to be found in a lack of sensibility to pinching of the inner side of the thigh. If no reaction is excited by this, extremely painful operations can be performed without causing the slightest manifestation of suffering.

Another method of determining just when this transitory period is reached, since if it is passed the patient becomes extremely sensitive again, is to require the patient to count regularly from one up. As soon as the counting becomes ragged, and particularly when the last number enunciated is repeated again and again, the period of anesthesia is reached. Another method is dependent upon requiring the patient to hold his arm straight up and keep it there. When the arm begins to wave or drop, the anesthetic period is reached. A transitory anesthesia in partial narcosis may also be obtained by chloroform given in the same way.

IODIZED CATGUT.

SENN (*Journal of the American Medical Association,* vol. xiv, No. 13) notes that the very fact that so many different methods of sterilization of catgut are still in vogue is convincing proof that none have proved entirely satisfactory. The ideal preparation consists in rendering material not only absolutely sterile, but also mildly antiseptic, without impairing its tensile strength, and without destroying its durability on the one hand and interfering with its absorbability on the other. The most recent method, that of Claudius, is dependent upon a fact well confirmed, that a one-per-cent aqueous solution of iodine destroys the spores of anthrax in eight days. It was also demonstrated that iodine, after eight days' treatment, not only renders the catgut absolutely sterile, but at the same time strongly antiseptic; so that if it be embedded in a medium infected with pyogenic microbes, the growth of these germs is inhibited for some distance from the threads.

The method of operation is as follows: The commercial raw catgut without any preliminary preparation is wound on a glass roll, two strings tied together to each roll. The disinfection is accomplished by immersion in a one-per-cent solution of iodine. The solution is made by dissolving one part of iodine and one part of potassic acid in one hundred parts of water. The solution is prepared by dissolving the potassic acid in a small quantity of water, to which the iodine, finely powdered, is added, and the concentrated solution is then diluted to one per cent. The solution and catgut are kept in a bottle with a wide mouth, which is closed with an accurately fitting glass stopper. The date is written on the label of the bottle. After eight days the catgut

is ready for use, and is preserved in the same bottle and same solution. Before using the catgut, it is immersed on the glass roll in a three-per-cent solution of carbolic acid or an indifferent sterile fluid for the purpose of removing the iodine from the surface of the threads. The threads are cut in the carbolic acid solution as they are needed. The catgut not used during the operation is returned into the bottle, thus doing away with any unnecessary waste of material. Catgut thus prepared is pitch-black, soft, pliable, and almost as strong as silk. The knots are firm and not liable to slip.

According to the size of the catgut, its removal by absorption takes place in from twelve to sixteen days, being a little more than alcohol catgut. It does not irritate the tissues, as the free iodine is soon converted into potassic and sodic iodide by chemical combinations formed with the salts of the tissue fluids.

The iodized catgut has been given an extensive practical test in Frederick's Hospital, Copenhagen, and has been found eminently reliable. The ease of its preparation, the quality of the product, the results of bacteriological investigations, and what has been ascertained of its practical utility are sufficient inducements to give it a prompt and fair trial in practice.

The results of the use of this iodized catgut in the Rush Medical College have been satisfactory. This method of preparation recommends itself particularly to the country practitioner.

THE TREATMENT OF ACTINOMYCOSIS BY THE X-RAY.

HEIDINGSFELD (*Cincinnati Lancet-Clinic*, March 28, 1903) describes the case of a farmer suffering from actinomycosis of the jaw. After the disease existed for upwards of a year, a surgeon diagnosed it as cancer, and advised removal of the right half of the lower maxilla. Three months later this patient was exposed to the *x*-ray treatment for three months, twenty-five applications of the light being made in that time. The treatment was perfectly futile. After three months' rest the patient consulted a second *x*-ray specialist, who gave twenty applications in nine weeks with negative results. Iodine treatment, begun two years from the beginning of his trouble, was however followed by a marked improvement.

LUMBAR PUNCTURE IN BRONCHOPULMONARY INFECTIONS.

NOBECOURT in the *Revue Mensuelle des Maladies de L'Enfance* for April, 1903, notes the pathogenesis of meningeal symptoms so frequent in the course of non-tuberculous bronchopulmonary infections only began to be understood from the time that lumbar puncture was regularly practiced. Lumbar puncture was performed upon thirty-one children suffering from bronchopulmonary infections; seven of these exhibited no symptoms of meningitis; the others presented pronounced symptoms varying from super-rigidity of the neck or the extremity to generalized convulsions. The seven children subject to lumbar puncture without meningeal symptoms showed with one exception very little excess of cerebral spinal fluid, which was clear, contained in four cases a trace of albumin, and in two cases a few leucocytes; in one case some lymphocytes; in three cases the liquid was sterile. Two of these cases recovered. Twenty-four cases exhibited distinct signs and symptoms of meningitis. Thirty-seven punctures were made. The cerebrospinal fluid was always hyperabundant; was turbid in two cases. In some cases there was a trace of albumin. In half the cases examination failed to show the presence of leucocytes.

The author finds that in the course of bronchopulmonary infections complicated by meningeal phenomena, the cerebrospinal fluid is generally greater in quantity than when these meningeal symptoms are absent. It is usually limpid, being only exceptionally turbid. Heat and acetic acid may detect a trace of albumin whether or not symptoms of meningitis are present. The albumin is most abundant in the turbid secretions. A moderate leucocytosis (lymphocytes and even polynuclears) may be found in the absence of meningeal phenomena. In half the cases there are no leucocytes, even when symptoms of meningitis are present. The leu-

cocyte reaction was observed in only twenty-five per cent of cases, even when meningeal symptoms were pronounced. Albumin and leucocytosis bear no relation to each other. The fluid was usually sterile, although in two cases it was found to contain pneumococci.

As to the information furnished by lumbar puncture in regard to the clinical symptoms and the gravity of the disease, no such relation can be established. Slight clinical manifestations may be accompanied by leucocytes, and severe manifestations by any other symptoms aside from hypertension. Hence, this method of examination affords no basis for prognosis. Of the twenty-four children who presented meningeal symptoms, only four were cured. In two the liquid did not contain leucocytes; in two it contained leucocytes in small numbers.

GASTROINTESTINAL PERFORATIONS AND THEIR DIAGNOSIS.

In the *Journal of the American Medical Association* of April 4, 1903, CONNELL discusses this subject at some length, reaching the following conclusions:

1. The previous attempts at an early accurate diagnosis of perforation of the gastrointestinal tract without opening the abdominal wall have not been adapted.

2. There has been practically no improvement in the method of diagnosing such conditions during the past century.

3. The treatment of the perforation *per se* during the last century has progressed to a state bordering on perfection when compared with the older methods.

4. The diagnosis of gastrointestinal perforations is one of the most important unsolved questions in the domain of abdominal surgery.

5. There is no pathognomonic sign or symptom or group of signs or symptoms of perforation.

6. The only positive method of arriving at a diagnosis to-day is to either perform an exploratory laparotomy or await the development of a peritonitis.

7. To await the development of a peritonitis will reveal the diagnosis too late for the most effectual treatment.

8. Exploratory laparotomy as a routine measure will of necessity result in some cases being needlessly exposed to the many dangers of a major operation.

9. Exploratory laparotomy is not a harmless procedure.

10. The consensus of opinion is in favor of exploratory laparotomy as a choice between two evils.

11. The fact that even the most expert clinicians fail to diagnose perforation in all cases, and even diagnose such a condition when it does not exist, shows the great need of improvement in diagnostic methods.

12. The diagnosis should be arrived at before the treatment of the perforation is complicated by the presence of a peritonitis.

13. The injection of air or normal salt solution into the peritoneal cavity and withdrawal of the same for examination will do no harm.

14. Such a procedure will, in many instances, reveal a perforation before any sign or symptom of peritonitis exists.

15. The treatment of the perforation *per se* is simple and satisfactory.

16. The treatment of the complicating peritonitis is multiple and unsatisfactory. The best treatment is prophylactic—*i. e.*, early diagnosis and repair of perforation before peritonitis has become established.

PROSTATECTOMY BY THE PERINEAL ROUTE.

LLOYD, in the *Birmingham Medical Review* for February, 1903, in commenting upon Freyer's total enucleation of the prostate by the perineal route, states that he hears on good authority that deep urethral stricture has followed this operation. He notes that prostatic hypertrophy appears in several distinct pathological forms: thus, the enlargement may be uniform in character, all parts of the gland being equally affected. This symmetrical form of enlargement is the least liable to be attended by symptoms. One or more of the lobes into which the organ may be divided may be alone enlarged: thus, the middle lobe may be so increased in size as to entirely obstruct the urinary flow without any tumefaction of either of

the lateral lobes. Most localized prostatic overgrowths are adenomatous in structure, forming distinct encapsulated tumors within the prostatic capsule; they are generally multiple, and can be enucleated without difficulty, and usually without danger to the prostatic urethra. Some are rather of the nature of true fibromata, are more closely held in their surrounding tissues, and can be enucleated with greater difficulty; whilst others, the hardest and toughest of all, are products of chronic inflammatory processes resulting in hypertrophy and sclerosis of the connective tissue of the entire prostate and of its capsule; it is often impossible to remove them by enucleation, and even partial enucleation is likely to be attended by more or less extensive evulsion of the prostatic urethra.

An extremely ingenious theory as to the mechanism of prostatic retention is given. The prostatic urethra is a compressible tube, and unlike any other duct in the body, is surrounded by a thick ring of muscular and glandular tissue, which is completely enclosed—and this is the practical capsule of the prostate, derived from the rectovesical fascia. This prostatic capsule is funnel-shaped, with the narrow extremity forward at the triangular ligament, and here also its walls are thickest and most resistant. The broad end of the funnel looks toward the bladder; here the walls are thinnest, and it is in this direction therefore that the enlarging prostate chiefly develops. The internal capacity of this inelastic capsule being strictly limited, the more tightly stuffed it becomes the greater the difficulty in anything passing through it, and when the cone-shaped prostatic tissue is driven forward by the urine behind it under pressure from the contracting bladder muscle, then the tissues within the narrower anterior part of the capsule become so tightly jammed, and the included urethra so closely compressed, that urine cannot pass through, and retention results. This is one of the reasons why "prostatics" will tell you that the harder they strain to get the urine away the greater their difficulties, and they have only to strain hard enough for the urine to stop altogether. Not only has this extracapsular pressure an effect upon the water escape, but it retards also the blood circulation through the great veins of the prostatic plexus, and gives rise to chronic venous congestion of the bladder and its resulting nutritive disturbances to the muscular and other tissues of the vesical walls. The ball-valve action of the middle lobe alone sometimes constitutes the obstructive difficulty, but this is exceptional. Its mechanism is easy to understand, for it is like that of the ball in the neck of the soda-water bottle.

The prostate has a tendency to enlarge in thirty-three per cent of men over fifty-five years of age; but not more than five per cent ever suffer from symptoms. The diagnosis of prostatic enlargement is made by bimanual palpation. Lloyd describes an operation of perineal prostatectomy which, like that practiced in this country, gives successful results. He calls attention to the ingenious procedure of Delageniere. This consists in enucleating the hypertrophied prostate out of its capsule, where it has been imprisoned and strangled, and retaining it in the tissues in front of the rectum. It is a displacement of the organ without any mutilation. In this new situation the prostate is free, and the nodules situated in its substance, and which have compressed the urethra, cease their compression and the conduit becomes permeable again. The dislocated prostate more or less atrophies in its situation. The operator is led to this procedure by observing during the performance of several prostatectomies by morcellement that after division of the prostatic capsule, before any prostatic tissue had been cut away, hard and soft instruments could at once be passed per urethra easily, this having been quite impossible before the operation. This procedure is carried out through a 2-inch median incision, which ends half an inch from the anal margin, and is then carried round the anus to the left for a distance of a quarter or even a half of the anal circumference. A sound is passed into the urethra as far as the prostate, and acts as a guide in the deeper dissection. The rectum is carefully separated until the levator muscles are seen, and the left one divided with scissors; since without this division access to the whole under surface of the prostate is difficult. The capsule

is opened throughout its length by a median incision and also transversely, or it may be better to incise where the gland is most prominent. It is essential, however, to divide the capsule freely, so that the finger may be passed between it and the gland tissue. The enucleation is made freely on every side—above, below, to the right, and to the left. The prostate having been freed is displaced downward and backward toward the bowel. A drain is placed beteen the prostate and the rectum, and the perineal wound closed.

ARTERIOVENOUS ANASTOMOSIS.

GALLOIS and PENATELLE (*Revue de Chirurgie,* No. 2, 1903), after having seen a case of obliterative arteritis resulting in the destruction of both feet, had the idea suggested to them by Jaboulay of the possibility of carrying arterial blood to portions of the body thus threatened by means of surgical intervention. The patient exhibited the characteristic intense and exhausting pain, followed by a sensation of cold, and outward symptoms of dry gangrene. This was first observed in the right foot, which was amputated because of recurrence of dry gangrene of the stump, and agonizing pain. The second amputation was performed six weeks later at the middle of the leg. Six weeks later an amputation was necessitated at the middle of the thigh. This was followed by a cessation of pains, and general improvement in the patient's condition. But some days later symptoms of gangrene appeared for the first time in the left foot. Jaboulay decided to make an effort to carry blood to the devitalized section by an arterial anastomosis in Scarpa's triangle. The artery and vein were approximated by suture; each was opened by a longitudinal incision one and one-half inches in length. The borders of these two incisions were secured to each other by a double line of suture, and finally the adventitiæ of the two vessels were approximated by sewing. On releasing pressure from the artery and vein there was no bleeding. Pulsation was noted in the popliteal vein the next day, but it did not persist. There was no thrill at the seat of operation. Gangrene was not arrested, and amputation of the thigh was afterward necessary. So great was the obstruction in the larger vessels that not a single ligature was needed. The large venous trunks were completely obstructed by clots. The patient died five days later, apparently of a cerebral embolus. The author states that San Martin y Satrustegui, after admirable experiments, has twice practiced successfully arteriovenous anastomosis upon man. In one case the gangrene had reached the malleoli. After the anastomosis, pains were abated for a time, but soon recurred, and amputation was required. In the other case the gangrene affected three toes. These were amputated and anastomosis performed. The gangrene did not extend, and the patient recovered.

As to the method of performing lateral anastomosis, the suture should be of fine silk, and should be in four rows, the first including the sheaths of the vessels and adventitia before the longitudinal opening is made; the second including the inner coatings of the two vessels along the posterior border of the incision; the third the inner coating of the two vessels on the anterior border of the incision; and the fourth the sheaths and adventitiæ lying in front of the seat of anastomosis. The anastomosis is accompanied by digital pressure above and below or by temporary ligation.

Carrel and Morel made an end-to-end anastomosis of the carotid artery and jugular vein of a dog, the vein beating as would an artery three months later. The method of operating consisted in preliminary dilatation of the two lumina by three anchoring sutures, placed equidistant one from the other, after which the divided lumina were brought together by a suture of very fine silk passed by means of fine, round-pointed needles.

On man it would seem better to perform arterioanastomosis by implantation, the end of the artery being carried into the vein. By this method the artery should be divided about two centimeters below the point of implantation, should be gently denuded, and should be invaginated into the vein with a few points of suture to maintain this invagination. Of course, the object of this operation is to carry arterial blood through the veins to

portions of the body which have become lowered in vitality because of the narrowing of the normal arterial conduits. This blood, carried by the veins, is supposed, after having performed its functions, to be carried away by other veins. This implies overcoming the obstruction of the valves, and mechanically working in direct opposition to the ordinary capillary current.

Experimental research upon a cadaver shows that retrograde injections into the veins may be satisfactorily accomplished since colored fluids are readily carried back by other vessels. This because of the absence of valves, and the multiplicity of venous anastomoses. The injections thus forced into the veins do not, however, pass other capillaries and escape through the carotids. In the upper extremity, injection of colored fluids into the veins was promptly returned by other veins; these being blocked, further injections were impossible; the result being the same in the lower extremity. It would seem just, therefore, to conclude from experimental evidence that the penetration of the liquid by a retrograde injection into the principal vein of an extremity is normally arrested by the healthy valves. It is otherwise, however, in cases of arteriovenous aneurism; there is a gradual dilatation of the veins by means of which the resistance of the valves is overcome. The practical results in the few cases are *nil*. On theoretical grounds there seems no reason to suppose that this treatment will be of service, and yet since nothing else presents itself as likely to be of use, it is sufficiently alluring, and has enough of the suspicion of promise to make it worthy of further trial.

THE ROENTGEN RAY IN GYNECOLOGY.

DELPHEY (*Annals of Gynecology and Pediatry*, vol. xvi, No. 2) states that by the *x*-ray dermoid cysts in uterine gestations may be detected; but the main use of the Roentgen ray in gynecology is in the treatment of malignant neoplasm. It is stated that a number of cases of carcinoma have been very much improved, and epitheliomata have apparently been cured, and soon after treatment pain and discharges are lessened, and later the neoplasms shrink and disappear entirely. He believes that should no improvement be manifest after fifteen or twenty treatments, the operator should not be discouraged, since cases are reported which, though failing to yield, afterward underwent complete involution.

The *x*-rays are applied by means of a speculum where needful, and Delphey employs for this purpose a thin sheet of celluloid of proper dimensions, coiled on itself to a small diameter, introduced into the orifice and allowed to expand. The first sittings should not be more than seven or eight minutes in duration, and not oftener than every second day.

THE TREATMENT OF PROSTATIC HYPERTROPHY.

In discussing prostatic enlargement, ROSVING (*Archiv für klin. Chirurgie*, Bd. 68, Heft 4) discredits all the theories which have thus far been advanced in regard to the pathogenesis of this affection. Basing his theory on the assumption that the life and motility of the spermatozoa are dependent on the prostatic secretion, he suggests that the prostatic hypertrophy is an effort on the part of nature to effect a compensatory increase in the quantity of the prostatic secretion to make up for the deficiency in its quality resulting from senile changes. He considers that the true solution for the cause of prostatic enlargement will be found by working along the lines of the above theory.

If this explanation is found to be correct, then all attempts at curative treatment for the prostatic enlargement should be based upon an effort to prevent the passage of the spermatozoa by some such means as castration or vasectomy, so that by relieving the prostate of this source of stimulation or irritation the tendency toward hypertrophy is overcome and existing enlargements may even subside. By other operations only a temporary diminution in the size of the prostate can be expected.

The author has employed systematic catheterization in the treatment of 126 cases of prostatic enlargement. Only ten

of these cases can be regarded as having obtained more or less permanent relief from their symptoms. These ten cases presented practically the same clinical history and complained of no symptoms beyond having to urinate once or twice during the night for one year or longer, and then were compelled to visit a surgeon on account of acute retention. In seven of the cases the retention developed after free indulgence in alcohol. In each of the ten cases examination revealed only moderate enlargement of the prostate. Continuous catheterization was employed in these cases for ten days, and thereafter daily catheterization until all obstructive symptoms subsided and no further treatment was necessary. After a period of one to six years without treatment none of these patients presented any more serious symptoms than having to urinate one to three times during the night and having some slowness of the stream in the morning. These patients demonstrate that even in cases of complete retention the lesion in the prostate is not necessarily far advanced, and an attempt should always be made to relieve the patient by the use of the catheter before subjecting him to an operation.

A second group of ten cases was temporarily improved by catheter treatment. None of these cases had total retention, but all had partial retention with frequency and difficulty of urination. Catheterization at regular intervals for two to four weeks enabled these patients to empty the bladder completely during the day, but after a few weeks or months their old symptoms returned.

In a third series of ninety-one cases treatment with the catheter did not affect the condition of retention in any way, and only served as a palliative measure.

The remaining fifteen patients presented symptoms of partial retention. The amount of residual urine steadily increased in all these cases after instituting catheter treatment, and the patients soon became unable to void any urine spontaneously.

Of the 116 cases in which the symptoms of retention were not relieved by means of the catheter, eleven presented symptoms of such a severe infection of the urinary tract as a result of catheterization that every form of operation appeared to be contraindicated. All these patients died in a short time of uremia secondary to an infectious pyelonephritis.

Thirty-eight of the 116 patients either objected to operation or were content to lead a catheter life. The remaining sixty-seven patients soon found catheter life unbearable, because of the increasing difficulty of passing the catheter and because of attacks of cystitis, urethritis, epididymitis, etc. On these sixty-seven patients eighty-six operations were performed—castration being performed in five cases, double vasectomy in forty, Bottini's operation in fourteen, and partial prostatectomy in six cases.

Of the five patients on whom double castration was performed, three have been cured for periods of fifteen months to six years since operation, and the remaining two patients presented no changes in their symptoms as a result of the operation. In the three cases which were cured the prostate was soft and spongy and the patients never had gonorrhea, while in the other two cases a history of gonorrhea was given, posterior urethritis and prostatitis were present, and prostate was firm and fibrous.

Of the forty cases in which double vasectomy was performed, four patients showed no change in their symptoms and later had a cystotomy performed; nine were improved and twenty-seven were cured in the sense that urination was no longer difficult, painful, nor unduly frequent, and residual urine was either absent altogether or did not exceed 10 to 20 cubic centimeters. Twenty-four of these twenty-seven patients were still free from urinary symptoms six months to six years after operation, while the remaining three had a recurrence of symptoms and underwent a Bottini operation within six to twenty-four months after the vasectomy was performed. One patient who had nephritis died of uremia on the fourteenth day following the operation of vasectomy.

Of the fourteen cases treated by the Bottini operation, two were permanently relieved of their symptoms, five were improved, and one died as a result of the operation, while in the remaining six the condition became worse after operation.

In six cases in which the cystoscope revealed the obstruction to be due to an enlarged middle lobe of the prostate, the middle lobe was excised through a suprapubic incision, and all the patients were again able to evacuate the bladder contents spontaneously.

Suprapubic drainage was employed in twenty-one cases. This operation was performed on cases of dilated, infected bladder which possessed little or no contractile force; in the cases in which the curative operations failed; in cases of violent cystitis which resisted all other forms of treatment and threatened the life of the patient; and finally in cases in which catheterization produced severe hemorrhage.

Four of the patients died shortly after operation as a result of their advanced renal lesions, but all the remaining cases are alive and well. In three cases normal urination was established after six months. Suprapubic drainage has greatly prolonged the life and added to the comfort of many of the other patients.

As a result of his observations on the above cases of prostatic enlargement the author believes that all cases suffering from only a moderate degree of retention or a first attack of complete retention should be treated first by regular catheterization, for by this means the symptoms will disappear in a certain number of cases and the patients will not require treatment for several years. It should be remembered, however, that this treatment is not curative, and the patients should be advised to return on the first appearance of symptoms of retention, when a single catheterization may again ward off serious trouble for a long time.

In cases of greatly distended bladder with a very large amount of residual urine, experience has shown that catheterization is not beneficial, and may prove dangerous by causing an infection. In such cases a vasectomy and eventually a prostatectomy should be performed.

In cases of complete retention with cystitis, and a prostatic condition which often gives rise to hemorrhage or chills and fever on introduction of the catheter, suprapubic drainage should be employed at once, and a vasectomy should be performed either at the same time or later with a view to closing the suprapubic opening and reëstablishing urination by the normal route after the prostate shrinks and the cystitis subsides.

In the cases in which vasectomy, castration, Bottini's operation, and prostatectomy fail to relieve the retention, choice of treatment must be made between regular catheterization and permanent suprapubic drainage. The former line of treatment should be chosen for patients who do not find catheter life too burdensome, and yet who have the time, wealth, and intelligence necessary to pass a catheter aseptically four to six times a day. Suprapubic drainage should be selected for poorer and less intelligent patients, and also for those cases in which catheterization is difficult.

THE OPERATIVE TREATMENT OF CARCINOMA OF THE RECTUM.

CAIRD (*Scottish Medical and Surgical Journal,* April, 1903) advocates early operative interference in cases of carcinoma of the rectum, but when the advantages of a radical extirpation have been lost by delay and extent of the disease, then palliative colostomy should be performed, which will depend on the peculiarities of each case; such as the general state of health, the suffering, the amount of hemorrhage or irritation of the bowel, the mental attitude, and the possibilities of future care and nursing. He asserts that most cases of carcinoma occupy a site above the level of the sphincter, within reach of the finger. To remove this growth, to retain the sphincter, to restore the canal, and to preserve all its normal functions should be our aim. It is with this object that the sacral or parasacral method of resection has been introduced. To gain more room, it may be necessary to remove or displace the coccyx or portions of the sacrum, as in the well known plan associated with the name of Kraske. When the growth lies high and does not encroach on the sphincteric canal, this route is specially applicable, and the less the evidence of adhesions to surrounding structures, the more favorable the outlook. Posterior fixation of the tumor can be readily dealt with. Anterior adhesions are more formidable. In the male, where

there may be fear of involvement of the prostate and floor of the bladder, a careful examination under an anesthetic, with an instrument in the urethra, proves very helpful. The prospect is more encouraging when it is remembered that the neoplasm is long in breaking through or involving the pelvic fascia, and that much of the surrounding thickening is often of an inflammatory nature. In the female a preliminary mesial laparotomy permits a manual examination to determine the extent and relations of the tumor from the pelvic aspect. Too much stress should not be laid upon glandular enlargement, as we are dealing with an ulcerated and very septic surface, and hence lymphatic hypertrophy need not have the same significance as it has elsewhere—for example, in the case of axillary infection in a mammary carcinoma with unbroken skin.

Operations for the removal of rectal neoplasms are carried out on the same principles which guide us at higher levels in the intestinal tract. If one is satisfied that the patient's condition warrants operative procedure, there should not be too much preparation in the way of purgation and enemata. A preliminary colotomy possesses little advantage, if any, and a mesial exploratory abdominal incision for the mere sake of ascertaining how far up the neoplasm extends, when this cannot be ascertained per rectum, is but rarely essential. The upper limit of rectal carcinoma is believed to be generally accessible from below.

The bowel should be thoroughly washed out on the operation table, while the patient is anesthetized, and boric or normal salt solution will effect all that is required.

Sepsis constitutes the chief danger of these operations, hence during the preliminary cleansing, disinfection, and rectal manipulation, the surgeon should protect his hands by wearing rubber gloves. He now packs some gauze into the rectum below the tumor, discards his gloves, and thoroughly purifies the whole field of operation and the perineum. In the female the roomy pelvis rarely necessitates the removal or displacement of any bone, or at most of the coccyx only, that access is free and manipulation on the whole not very difficult, the vaginal canal giving further aid. In the male the pelvic outlet is smaller, and the variable configuration of the sacrum and coccyx may compel one to deal freely with them, thus adding to the gravity of the case. After gaining entrance by the customary parasacral incision and division of the sacrosciatic ligaments, it is advisable to isolate the gut and connective tissue of the sacral curvature and to open the peritoneal cavity early. This defines one's position better, permits us to sever the rectum from the pouch of Douglas, and enables us to follow the rectum from above downward. By slipping a wisp of gauze around the rectum above the level of the neoplasm, the gut is then pulled gently down until a healthy surface, sufficiently far beyond the diseased area, and covered with visceral peritoneum, projects into the wound. The divided pouch of Douglas may now be sutured to the prolapsed bowel, so as to shut off the general peritoneal sac. In addition to this, the upper part of the pelvic wound may be well filled with iodoform gauze as a further protection. The general wound beneath and around the bowel is now stuffed with gauze, the assistant's fingers are substituted for the packing in the anal canal, and with due care the gut is clamped as required, well above and below the tumor, and the latter removed. The cut surfaces are now cleansed, and we ascertain if it is possible to approximate them. To restore the canal, end-to-end sutures may be employed, followed by a layer on the principle of Lembert, taking full advantage of the welcome peritoneum on the upper portion of the gut. The uniting may be difficult and tedious. A flatus tube is inserted from the anus and carried well beyond the point of union, and the displaced bone, if any, is returned. The wound is only partially closed and carefully stuffed with iodoform gauze. A large dressing is applied over all, through which the tube protrudes. It is hoped in this fashion to get a primary healing of the bowel, while the greater part of the external wound must close by granulation.

If it be found that the extremities of the divided bowel only meet with difficulty, an attempt should be made to unite the anterior part of the lumen at least. This greatly tends to prevent fecal ex-

travasation into the surrounding tissue, and the resulting posterior fistula gradually heals, or can be dealt with later, leaving a normal outlet. Where a junction is impossible, the patient may be left with a permanent artificial anus in the sacral region.

All the patients, ten in number, under the author's care, subjected to this radical cure of complete extirpation of the carcinoma, recovered from the operation. In the males the coccyx and portions of the sacrum had to be displaced or removed. In the female, at the most, only the coccyx was taken away. In four males and one female a sacral anus was established, over which the patient had fair control, and in four females and one male the result was perfect, the patients being able to defecate normally after complete restoration of the anal canal. In one instance only was primary union of the bowel obtained.

It must be remembered that a tendency to stricture remains, more especially when we do not get primary union of the gut. This must receive attention, and under suitable care disappears in course of time. If there be local recurrence this may occur at the site of the stricture and necessitate a second operation.

Attention is drawn to the frequency with which iodoform intoxication is produced, and one should carefully guard against this risk and be prepared to recognize and treat it should occasion arise. A solitary instance of lysol poisoning of transient duration has also been observed.

From the further history of such a limited number of patients, some of whom have only recently been dismissed, it is not easy to deduce much. Two died within a year from local glandular recurrence. The others were alive and well, one four months, one ten months, three one year, one eighteen months, and one four and a half years respectively after operation.

In the few cases which Caird has had where the disease came close to or involved the sphincteric region, the perineal route has been adopted, and the usual elliptical incisions have been made into the ischiorectal fossæ, thus sacrificing the entire anal outlet, or in a few suitable cases an attempt has been made to preserve the sphincter fibers. This route presents the very great advantage that one can readily judge of anterior adhesions and complications and more easily cope with them than by the parasacral method. Moreover there is ample room, and the space may be increased by turning aside or removing the coccyx. Here again it is wise to open the pouch of Douglas at an early stage of the operation. Advantage of this may be taken to throw some saline solution into the peritoneal sac just as one does during exhausting and prolonged operations within the abdomen. Much is also gained on conclusion by bringing the bowel well down to the perineum and suturing it there by deep buried catgut sutures, which unite it by its outer aspect to the denuded ischiorectal tissues. In other respects the procedure and dressing are carried out as in the parasacral route. Of four cases treated in this fashion, all survived.

STATISTICS OF ETHYL CHLORIDE NARCOSIS.

LOTHEISSEN (*Centralblatt für Chirurgie,* No. 20, 1903) notes that current literature would lead the casual reader to the conclusion that ethyl chloride is a dangerous anesthetic, and states that as he was one of the first to use this drug he feels a personal interest in holding up its virtues to the profession lest an excellent medium should from lack of knowledge of its good qualities be passed by.

In analyzing the fatal cases Lotheissen concedes that Soulier justly attributed death to the anesthetic. In Kocher's case, however, death followed a week later, while in König's clinic the case which died took ethyl chloride for one minute; this was followed by ether for forty-nine minutes, while a substernal struma was being extirpated. The patient, already weakened, died the next day of acute pulmonary edema—evidently an ether death. Packer lost a powerful drinking man, forty-one years old, evidently from the narcotic. This patient was suffering, however, from a well marked arteriosclerosis of the coronary arteries. Seitz reports the death of a man, fifty-five years old, seventeen hours after the local use of ethyl chloride for the extraction of

three teeth, holding that poisoning with the drug was obvious. This case died from apoplexy, which had evidently nothing to do with the local employment of chloride of ethyl.

McCardie gave ethyl chloride to a thirty-seven-year-old drunkard on whom nitrous oxide was powerless, in order to perform urethrotomy. Twenty grammes were given in seven minutes. The patient recovered completely and drank a glass of milk, but an hour and a quarter afterward was found dead. Because of lesions found post mortem, it is evident that this was not a narcosis death.

Bossart reports the case of a child, twenty months old, dead of ethyl chloride narcosis. There was a history of three weeks' whooping-cough and two days' diphtheria; the latter occasioning such stenosis of the larynx that tracheotomy was required. After three minutes, during which 5 cubic centimeters of ethyl chloride had been given, the breathing became alarmingly bad. The trachea was opened and a cannula was introduced, but the patient was practically dead—evidently of sudden heart failure. Common enough in cases of diphtheria intoxication, even when no narcotic is given, Lotheissen justly remarks that in such a case an anesthetic should have been withheld, and that a similar result could be expected from any general agent. He notes that there is only one true ethyl chloride death, and only one death during narcosis but not dependent upon it.

In April, 1902, kelene had been given sixteen thousand times, and since then to the time of his report at least one thousand times more. Most of these cases took the anesthetic at the hands of dentists. From these figures it is calculated that there is one death in 17,000 cases, thus giving a better mortality than ether. It is especially commended for minor operations because of the ease with which it is taken, but is held to be equally serviceable for long operations lasting from one to one and a half hours. One of its most useful purposes is as a preliminary to other forms of narcosis, especially ether, since the effect of the latter is greatly strengthened and the excitation stage, so dangerous for weak hearts, is done away with.

COMBINED OSSEOUS PERCUSSION AND AUSCULTATION IN THE DIAGNOSIS AND LOCALIZATION OF FRACTURES.

Dr. PLESCH (quoted in *Annal. Chir. et d'Orthoped.*, December, 1902) recommends the method of combined osseous percussion and auscultation as a means of diagnosis in cases of fracture when the Roentgen rays are not available, and in which a detailed examination for the classic signs is made impossible, either by the hypersensitiveness of the patient or the presence of local hemorrhage and swelling.

This procedure requires no special instrument, nor does it occasion any pain to the patient, and is based upon the character of the sound propagated by osseous tissue.

By percussing over the superior epiphysis of a healthy bone, at the same time auscultating over the inferior epiphysis, one perceives a clear tone, the acoustic qualities of which depend upon the length, thickness and density of the bone in question, as well as the condition of the surrounding tissues. In a normal individual percussion produces the same tone over corresponding bones on both sides of the body.

If there is an incomplete fracture the sound is no longer transmitted by a homogeneous structure, and the vibrations are greatly altered. If the fissure is of some extent the sound may be of a metallic nature. If the fracture be complete no sound is transmitted except when the fragments are in contact, and then it is a crepitation produced by the shock of percussion. As a means of control the corresponding bone on the opposite side should always be percussed and auscultated. The seat of fracture may be accurately determined by bringing the stethoscope little by little toward the point of percussion, and as soon as a clear tone is transmitted the extremity of the proximal fragment has been reached.

The epiphysis is taken as the point of election in percussing because it lies directly under the skin; but in cases in which some lesion attacks this point, the percussion may be practiced over a neighboring bone, since the articulation transmits the tone equally well. This method

has been verified by experiments upon the cadaver as a means of diagnosing not only fractures of the long and short bones and cranial vault, but of costal caries and osteomyelitis of the fibula.

THE STAMPING TEST IN THE DIAGNOSIS OF RENAL CALCULUS.

LUCAS (*Medical Press and Circular,* April 29, 1903) has recently invented a new test which sometimes gives the most remarkable results as an aid in the diagnosis of stone in the kidney. The patient supports himself by resting one hand on some firm object, then is made to flex the thigh on the affected side as high as possible. This causes the strongly contracted belly of the psoas muscle to press the kidney forward and outward. Next the patient brings the limb suddenly down, stamping the heel firmly on the ground. The kidney in this way suddenly loses its muscular support and is caught, as it were, unawares, whilst the jar carried through the pelvis and spine is communicated to it. A sudden acute pain is commonly caused by this maneuver when a calculus is present.

THE THERAPEUTIC USE OF SUPRARENAL GLAND IN CERTAIN DISEASES OF THE SKIN.

ENGMAN and LOTH (*Medical News,* May 30, 1903) in their clinical trials employed dry extract of suprarenals in the form of powder, increasing the dose gradually, since they state that they have seen untoward symptoms, such as nausea, dizziness, and acute tremor, follow a too free administration of the drug. To children under four years of age one-half grain three times daily, increased to two grains, may be given. For adults the dose is two grains, gradually increased to six grains; this three times a day. The remedy should never be taken on an empty stomach, especially not before breakfast, as violent purging, griping, nausea, and vomiting can be caused, probably by the local effect of the drug on the gastrointestinal mucous membrane. There seems to be a cumulative action on the nervous system, so that when long continued in fair dose, for a month possibly, the drug will in certain individuals produce a tremor of the extremities which is increased by a larger dose.

The diseases of the skin in which the gland seems to have any effect are those produced by some toxic disturbance exhibited by a derangement of the vessels, or of the nerves controlling them. In some instances the drug acts almost as a specific. It seems to be useless in conditions attended with chronic inflammation, or with exudation of cellular elements.

In general pruritus it was administered with marked benefit. In chronic urticaria four cases were entirely relieved by five-grain doses of the gland given three times daily without the assistance of any other drug, internally or locally. The gland appeared to have a rapid, specific action, at once relieving the pruritus and preventing the development of wheals. Lichen urticatus was treated in eight cases with complete success. Two cases of morphea were treated with marked success.

ARTIFICIAL ABSCESSES IN THE TREATMENT OF PUERPERAL SEPSIS.

MACKINTOSH (*Scottish Medical and Surgical Journal,* April, 1903) quotes two cases of puerperal sepsis treated by inducing artificial abscesses by turpentine injection, and notes that though they both recovered, it is not very safe to reason therefrom as to the efficacy of the treatment. Both cases were fairly severe, with temperatures up to 106° F. Whether the abscesses are local factories of antitoxins or of leucocytes is a question for the bacteriologist. The method is rather painful, and a preliminary injection of morphine is advisable.

SUTURE OF THE BRACHIAL PLEXUS IN BIRTH PARALYSIS OF THE UPPER EXTREMITY.

KENNEDY (*British Medical Journal,* Feb. 7, 1903) holds, as the result of his experience, that the only rational way to treat cases of birth paralysis is to deal with them as with injuries to the peripheral nerves in general. The lesion to the nerve in birth paralysis is, of course, unaccompanied by a cutaneous wound, and in consequence the condition of the

nerves cannot be examined before operation. As there is therefore the possibility that the lesion is a slight one which may be spontaneously recovered from, it is right to delay operation until the lapse of a certain time to see if the developing electrical reactions will indicate an approaching recovery of the muscles. When this period of time has elapsed without sign of improvement there must be no further delay, and the seat of injury must then be exposed and the nerve lesion dealt with on general principles. During the first few weeks of the child's life the electrical reactions are, of course, unsatisfactory, but by two months, before which age the undertaking of the operation is deemed inadvisable, it is possible to obtain good contractions of the muscles by the faradic current. If these are obtained, then the case ought to be left for a further period, and if after the lapse of another month good contractions are obtained with the faradic current in all the affected muscles, then the cases may be expected to recover naturally. In one of the cases which came under Kennedy's observation that is what happened. If, however, after two months no response can be got in the muscles with the faradic current, although the galvanic current evokes good contractions, it is safer to proceed with the operation than to postpone in the hope that recovery will eventually result.

In cases of birth paralysis of the upper extremity the operation is performed as follows:

The patient lies on his back with a pad placed underneath the shoulders, so that the head is well thrown back. The head is then inclined to the opposite side, and the face also turned in the same direction. In this position the supraclavicular space is well exposed. An incision is then made, extending from the outer border of the sternomastoid, commencing at the junction of its middle and lower thirds, passing outward and downward to the junction of the outer and middle thirds of the clavicle. On dividing the superficial fascia, platysma, and the deep fascia between the sternomastoid and the trapezius, the omohyoid muscle is exposed just under the lower edge of the wound. Above the omohyoid a little dissection exposes the nerve trunks emerging from under the cover of the scalenus anticus. The junction of the fifth and sixth nerves is easily found by tracing the two upper trunks outward. Having found the junction, the various branches are to be recognized and freed from adhesions. In the cases on which Kennedy operated there was no difficulty in exposing these nerves, which were found thickened, as is usual in nerves which have been damaged. When the junction is reached, it is found adherent, and these adhesions must be carefully separated, and the further course of the nerves traced beyond the junction. The separation is first made along the upper border, and this is carried on until the suprascapular nerve is reached, and it is then ascertained by following this nerve that it is free from adhesions. The division destined to contribute to the outer cord of the plexus is then traced out in a similar manner, and its freedom from adhesions ascertained. Similarly the third offset from the junction is traced downward toward the posterior cord of the plexus. Care must be exercised not to damage any of the small twigs which are given off from the fifth nerve previous to its junction. The nerve to the subclavius coming off near the junction, and therefore from the damaged part, has not been recognizable except in one of Kennedy's cases. Having cleared the affected part of the plexus it remains to deal with the damaged part of the nerve. This in all Kennedy's cases has been so evidently cicatricial that it appeared hopeless to deal with it other than by excision. He therefore divided the fifth and sixth nerves well above the cicatricial tissue.

When this is done there ought to be the appearance presented of fasciculi of nerve fibers projecting from the perineuron, and if this appearance is not obtained, but instead a cicatricial appearance, an additional slice must be removed from the central end, and a second slice, if necessary, removed until normal fasciculi are seen. To omit this precaution would be to risk failure. The cicatricial mass is then seized and pulled inward, so as to put the three peripheral divisions on the stretch, and these three divisions—namely, suprascapular nerve, branch to the outer cord, and branch to the posterior cord—divided at a point which ap-

pears to be distal to the cicatricial area, and in healthy nerve. Each of these three sections must also expose nerve fasciculi, and if not, additional slices must be removed until this appearance is seen. The three peripheral ends are then sutured to the two central ends by means of a single thread of fine chromicized catgut, which is passed through the entire thickness of the nerves. When the single suture is in place, but before it is tied, the shoulder is pushed upward, and the head inclined to the side which is being operated upon. This enables the nerves to be sutured without tension. The suture is then tied, bringing the three peripheral ends into contact with the two central ends. From the time that the suture is tied the nerves must be kept relaxed by keeping the head and shoulders approximated as much as possible. While this position of relaxation is being maintained the wound is sutured, and dressings are applied. On account of the head being approximated to the shoulder the neck is thrown into folds, and care must therefore be taken that these folds are separated by gauze, as otherwise cutaneous irritation would result and endanger the aseptic course of the wound. The child is then bandaged to a posterior splint of poroplastic felt which fixes the head and body, thus rendering movements of the neck impossible. The arm is fixed across the chest, and the bandages are so arranged that the head and shoulders are kept as much approximated as possible. The dressings remain undisturbed until the fourteenth day, when the cutaneous stitches are removed, and the splint is not then reapplied. After this no further treatment is adopted, the muscles being left to recover under the influence of the nervous impulses, which owing to the restoration of the nerves are now able to reach them.

In all the cases which Kennedy has operated upon the junction of the fifth and sixth nerves was, as already mentioned, apparently cicatricial. If the junction was apparently normal after the cicatricial surroundings had been found and separated, no doubt it would be right to refrain from excision; but if there should be any suspicion of a partial cicatricial condition of the nerve trunk, it would be safer to excise the entire segment in which the damage is seated than to trust to restoration of conductivity occurring in the damaged area.

In Kennedy's cases, after excision of the affected area, there was no difficulty in getting the central ends to meet the peripheral ends when the shoulder and head were approximated. In the event of the length of the nerve requiring to be excised proving so extensive that the union by suture could not be effected, the ends should be approximated without undue tension by means of suture, in the hope of adequate reunion by means of the newly formed nerve fibers bridging the gap in an aseptic wound.

In consideration of the hitherto unsatisfactory prognosis of these cases and of the safety of modern surgical procedure, it is Kennedy's belief that operation is the right course to follow in all cases which do not very early show spontaneous improvement.

TRAUMATIC ANEURISM IN LEFT GROIN; LIGATURE OF LEFT COMMON ILIAC ARTERY; RECOVERY.

MARTIN (*British Medical Journal*, Jan. 10, 1903) reports the following case, which is of marked interest, adding, as it does, one more to the very meager list of recoveries from the formidable operation of ligature of the common iliac artery.

Private J. S., aged thirty-one, while in action received a bullet wound in the left groin. He states that he fell off his horse a few minutes afterward owing to faintness. He remained in bed for three or four weeks, and thereafter felt weak, walked with a decided limp, had pain in the left groin, and felt a hard lump there. An aneurism must have formed after the bullet wound, and had been probably increasing slowly or had begun to coagulate. Later as the result of further trauma there was probably a rupture of the sac and a fresh outpouring of blood from the torn artery.

An incision was made from a point 1½ inches above and external to the center of Poupart's ligament to one inch above and internal to the left anterior superior spine, cutting through the skin and various muscle and fascial layers.

This exposed the aneurism sac, which looked extremely thin and felt very soft. This incision was prolonged upward in a slight curve, with the convexity downward and outward. The peritoneum was exposed and incised, and the intestines held back by warm sterile cloths. The sac could now be clearly defined. It was found to extend over to the brim of the pelvis and well outward into the iliac fossa. The external iliac artery could not be defined. The common iliac entered directly into the aneurismal mass, and the internal iliac emerged from the upper part of the mass. All hope of tying the external iliac was therefore abandoned; the iliac vein having been defined and separated, a double silk ligature was tied round the common iliac artery in two places close to the aneurism, and the artery divided between the ligatures. Pulsations immediately ceased in the internal iliac and over the aneurism. The incision was closed in the ordinary way, the peritoneum and muscles and skin being brought together separately, and a sealed dressing applied. The limb was surrounded evenly with thick layers of cotton-wool, and a flannel bandage firmly applied from the toes to the hip.

The after-history ran as follows: Two days later the left lower limb was much colder than the right, edematous, blanched, and anesthetic. There was no pulsation present in tibial or popliteal arteries; the next day, however, circulation was reëstablished, and the patient recovered. Several large watery blebs formed on the leg and foot.

Reviews.

THE PRINCIPLES OF BACTERIOLOGY. By Alexander C. Abbott, M.D. Sixth Edition, Enlarged and Thoroughly Revised.
Philadelphia: Lea Brothers & Co., 1902.

That Dr. Abbott's Principles of Bacteriology should have reached a sixth edition in less than ten years is a very certain indication of the fact that he has succeeded in presenting this somewhat difficult technical subject in a manner which has proved both useful and interesting to the persons for whom the book was written, namely, students and physicians. The present edition differs from its predecessor in the fact that its author has in every way brought the information in its pages up to the point at which bacteriology had arrived when his copy went to press. Altogether, in the 636 pages of the volume, there are 111 engravings, of which 26 are colored. We can strongly recommend this work to all our readers who wish to put themselves in possession of the latest and best information in this active field of scientific medicine. The price of the book is $2.75 in cloth.

A TREATISE ON PRACTICAL HYGIENE. By Charles Harrington, M.D.
Philadelphia: Lea Brothers & Co., 1903.

The first edition of Dr. Harrington's most excellent treatise on Hygiene was noted with commendation in the pages of the THERAPEUTIC GAZETTE when it first appeared. In the present edition Dr. Harrington has embodied additional facts which seem to him of importance in connection with this subject, and so has slightly enlarged the book, which is copiously illustrated, containing 105 engravings and 12 plates in colors and monochrome.

As Harrington's Hygiene is more complete than some of the smaller works on this subject, and is not so exhaustive as the classical work of Dr. Park, we believe that for these reasons, and also because of its intrinsic merits, it will prove even more popular in the future than in the past. The price of the book is $4.25 in cloth.

A TEXT-BOOK OF CLINICAL MEDICINE. By Clarence Bartlett, M.D. Illustrated.
Philadelphia: Boericke & Tafel, 1903.

We have examined this book, which is a large octavo volume, with a very considerable degree of interest, because it is, so far as we know, practically the first attempt of a homeopathic practitioner to present his fellows with what may be called a description of modern scientific methods in the diagnosis of disease. It breaks away from the antiquated paths which have been followed by many homeopathic practitioners in years gone by, and contains a description of those facts and procedures which are now universally recognized as correct by the best

practitioners of physic. The book is therefore to be welcomed, because it marks an epoch which we believe will ultimately aid materially in the wiping out of what may be called sectional lines in medicine; again, it is welcome because it will lead those who peruse it to a recognition of scientific facts which, when they are thoroughly understood, will make evident the fact that no one can successfully practice medicine by depending upon the dogma of a single physician who lived a hundred years ago, and who doubtless performed a useful mission in some respects, although he was mistaken in regard to many of his rather extraordinary views. We believe it is a fact that no so-called homeopathic practitioners of the present day adhere to the teachings of the founder of their school, having found it necessary, with the progress of medical science, to become doctors of medicine rather than doctors of a single idea, and this book is written by one who is a physician in fact. We trust that in the next edition the author will embody a larger number of illustrations from his own wide experience, and that he will impress upon the text, more positively than he has at present, the results of his own clinical experience, which will add materially to the value of the volume.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by H. R. M. Landis, M.D. Volume II, June, 1903. Price $2.50.

This volume of Progressive Medicine contains articles upon the surgery of the abdomen, including hernia, by Dr. William B. Coley, of New York; one on gynecology, by Dr. John G. Clark, of Philadelphia; another upon diseases of the blood and ductless glands, the hemorrhagic and metabolic diseases, by Dr. Alfred Stengel; and lastly, one upon ophthalmology, by Dr. Edward Jackson. As in previous years, Dr. Coley's article is interesting and very practical, bearing the stamp of a wide familiarity with current surgical literature, and also, what is more important, evidence of large personal experience in many of the conditions which he discusses. We believe that this article of Dr. Coley's will prove exceedingly valuable to all practical surgeons. One of the interesting parts of Dr. Clark's article deals with the question of cancer of the uterus, its diagnosis, and its radical treatment, and another with the diseases of the urinary system of women, which so often bring these patients to the physician's care. Dr. Stengel's article necessarily deals with the more recent researches concerning metabolism and the diagnostic significance of various changes in blood-serum and in its corpuscles, and later with diseases like exophthalmic goitre, gout, myxedema, and Addison's disease. Although Dr. Jackson's article deals with a specialty, nevertheless he has taken care to emphasize those points in the treatment of diseases of the eye which are of interest to the general practitioner, and thereby has presented a summary of his subject, interest in which is by no means limited to ophthalmology.

CONSULTATIONS SUR LES MALADIES DES VOIES URINAIRES. G. De Rouville. Preface par le Docteur Tuffier.
Paris: J. B. Bailliere et Fils, 1903.

This excellent work, intended as a guide to the practicing physician, doubtless accurately represents the modern methods of examination, diagnosis, and therapeutics employed by the most advanced genito-urinary surgeons of Paris, and these men, it is generally conceded, have a more extensive experience, at least in venereal diseases, than surgeons in any other part of the world. The treatment is laid down in an extremely clear and direct manner, and the illustrations are mostly helpful, though the reason for the first one, which represents a whiskered individual cleansing the urinary meatus first with an irrigating tube, and next with a pledget of cotton, is difficult to conceive.

The author states that instruments should be sterilized by at least a half-hour's boiling in soda solution, and uses silver nitrate 1 to 500 as a means of cleansing syringes. There is a very excellent though brief chapter upon the technique of catheterization, and upon choice of instruments; and foreign bodies in the bladders of women seems to be a topic of such importance that considerable space is de-

voted to it. A number of ingenious and practical self-restraining catheters are pictured and described.

Under Exploration of the Urethra it is interesting to note that no mention is made of the dilating urethrameter. The hypospadiac operation is that described in all text-books, and is probably one which has not been improved upon by modern methods, though the ingenious yet impracticable method of Rochet is considered worthy of notice. There is an excellent chapter upon retention of urine, and a number of helpful devices described by means of which the surgeon may introduce instruments through tight strictures. Some truly extraordinary methods of securing a catheter in the bladder are illustrated.

This book is an extremely practical one, and likely to be serviceable to the general practitioner who is occasionally called upon to treat genito-urinary cases.

DISEASES OF THE HEART AND ARTERIAL SYSTEM. By Robert H. Babcock, A.M., M.D. Illustrated with Colored Plates and Engravings.
New York: P. Blakiston's Son & Co., 1903.

This excellently printed and well illustrated book upon the diagnosis and treatment of diseases of the circulatory system is interesting, not only because it contains much that is valuable, but because it should be a stimulus to other members of the profession to overcome all obstacles in the achievement of medical success. It may not be known to many of our readers that Dr. Babcock has been entirely blind since before he began the study of medicine, and therefore the courage required in attempting to write a book can readily be appreciated. It has long been known to those who are familiar with his methods that he brings to physical diagnosis the delicacy of touch and hearing which persons deprived of their sight often possess, and in addition that he has an acute mind which enables him to grasp and retain facts which may be communicated to him at society meetings or from medical journals.

His illustrations are surprisingly good, and in most instances are directly clinical.

In some instances the more recent literature dealing with certain subjects has not been thoroughly covered, as, for example, in the treatment of aortic aneurism by electrolysis. But these are minor defects, and perhaps none of them would be noted were it not that one is primarily impressed, on scanning the pages of the book, with the thoroughness of the author, both as to his own descriptions and his recognition of the work of others.

To those who desire the most recent work devoted to the subject of diseases of the heart and blood-vessels we can cordially recommend Dr. Babcock's book, for it is a credit both to himself and to the profession of which he is a well recognized and valued member.

A TEXT-BOOK OF CHEMISTRY. By Edward Curtis Hill, M.S., M.D.
Philadelphia: The F. A. Davis Co., 1903.

Dr. Hill has prepared an octavo volume of about five hundred pages which he thinks is especially adapted to the use of students of medicine, pharmacy, and dentistry. The work is based upon the courses of lectures which he has been delivering in medical and dental schools for the past ten years. He acknowledges his indebtedness to other standard writers on this subject, and his pages show a greater endeavor to adjust chemical facts to practical medicine that is shown in many similar works. At the close of the chapters a series of questions are propounded with the object of enabling the student to subject himself to a personal quiz. The price of the book is $3.00.

UTERINE AND TUBAL GESTATION. By Samuel Wyllis Bandler, M.D.
New York: William Wood & Co., 1903.

To the busy practitioner engrossed in his work, and eager for fresh information only of such nature as bears clearly and distinctly upon the daily application of his knowledge to the alleviation of suffering, and incidentally to the earning of his daily bread, this work of Bandler will not appeal in the least. But to the scientist who appreciates that all true progress must be based upon the fundamental comprehension of facts which have apparently no immediate and practical bearing, the series of papers dealing with the processes antedating uterine gestation, the embedding of the human ovum, the trophoblast, the chorionic villi, the placenta,

the essentials of tubal gestation, and ovarian and placental secretion, will be of supreme interest.

Bandler quotes Glass to the effect that the ovary of a seventeen-year-old girl was transplanted into a twenty-nine-year-old patient from whom both ovaries had been removed two years before. The ovary was fixed in its normal situation through an opening in the sac of Douglas, per vaginam. Menstruation was restored, and the patient fully recovered her health. Morris removed the adnexa in a human patient and sewed a piece of one ovary into the stump of the right tube. One month later the patient became gravid, aborting the third month. Menstruation is said to occur for the reason that no fecundated ovum is present in the uterus or tube. The periodical swelling of the mucous membrane is said to be due to the secretion given off by the ovary. It is held that ovulation continues during pregnancy and lactation, and Dührssen has found spermatozoa in the tube three and a half weeks after the last coitus. Bandler holds that it is evident that ovulation as a rule occurs four to eight days before menstruation, but that it may occur at other periods, as ripe ova, practically speaking, may be present at almost any time. After ovulation the ovum is thrown out into the abdominal cavity, and then, influenced by the wave movement of the ciliated epithelium of the tube and the fimbriæ ovaricæ, finds its way into the uterus. The wave movement of the ciliated epithelium causes a current in the peritoneal plasma, which directs the ovum into one or the other of the tubes.

Lode injected, with a needle pointed toward the diaphragm, the eggs of ascarides into the abdominal cavity of rabbits, in the region of the umbilicus. After ten hours, without the excitement of coitus, he found these eggs in the tube. Knauer removed the ovaries of dogs, and sewed them into the mesentery. In one case on opening the abdomen he saw in one of the ovaries three ripe Graafian follicles. Shortly after, coitus took place, and in due time two young were born. Leopold has demonstrated that an ovum given off by one ovary may enter the tube at the other side. Lode has shown that an ovum finds its way through the tube into the uterus in thirty hours.

To those interested in the questions which touch most nearly the mystery of life, these scientific papers of Bandler must give food for thought.

SURGERY OF THE HEAD. By Bayard Holmes. New York: D. Appleton & Co., 1903.

The author states that this book belongs to a series devoted to every-day surgery of the human body. At least three distinct kinds of conditions are met with in practical work, namely: those that are most frequently encountered (these are thoroughly discussed); those that are less frequently met with but require instant relief (these receive the next share of attention); and lastly, those conditions that are of great theoretical importance though of less frequency (these are fully considered). It is stated that every possible device is used to secure in the mind of the reader the most intense and lasting impression. In each chapter there is an attempt made to teach pathology, diagnosis, and proper methods of treatment.

Holmes has included in this work sections upon the malformations and surgical diseases of the head and face, dealing also with abscesses and tumors of the cranial sinuses and of the parotid gland, and has for the practical surgeon illustrated the cardinal points of his teaching by admirably reported cases.

The book will be found an excellent guide to those who in their practical work deal with diseases and injuries of the head.

THE SURGICAL DISEASES OF THE GENITO-URINARY ORGANS. By E. L. Keyes, A.M., M.D., LL.D., and E. L. Keyes, Jr., A.B., M.D., Ph.D. New York and London: D. Appleton & Co., 1903.

Under this title, from the still live ashes of the one-time universally used text-book on genito-urinary diseases with syphilis, has arisen this modern revision, stimulated thereto by E. L. Keyes and E. L. Keyes, Jr. Syphilis in this last work has been omitted, because it is regarded as a genital disease only in its method of approach.

It is interesting to note, in view of the

recent writings on this subject, that the irrigation treatment of gonorrhea is warmly commended. It is recognized that although under this treatment the symptoms may subside promptly, there is likely to be a persistent discharge. Keyes states that to prevent the disease thus dragging on nothing is so potent as frequent change of treatment. The test of treatment is the patient's urine, which grows clearer as the treatment progresses; if not, something is wrong. In acute cases Keyes states he has found nothing comparable to permanganate in the anterior urethra. It is stated that in acute anterior gonorrhea the injections are far more likely to do harm than good; that among the newer remedies protargol and mercurol are useful—the former in 1:400 solution, the latter in 1:2000.

In the section devoted to prostatic hypertrophy the Bottini operation is described at length, and the author strongly favors Chetwood's modification, which consists in making galvanocautery incisions through a perineal cut. As to the choice of operation, Keyes holds that castration affords no permanent relief and fails to justify its statistics of mortality; that Bottini's operation is uncertain in its action; that Chetwood's modification, however, has the advantage of being accurate and certain, and is always the operation of choice unless the prostate is enormous. He finally states that prostatectomy in spite of its relatively high mortality will continue to hold its place in certain cases that otherwise could not be cured.

There is an admirable section upon contractures of the neck of the bladder, the remedy for which lies in the use of galvanocautery incisions through a perineal cut.

The section devoted to diseases of the bladder is truly admirable.

The author's conclusions in regard to the effect of chloroform upon the kidneys are rather at variance with those commonly accepted, since it seems to be clearly proven that this agent is distinctly more irritating than ether.

In the treatment of hydrocele Keyes states that all translucent fluid accumulations, no matter what their age or size, are amenable to treatment and cure by injection. Pure carbolic acid is preferred. The fluid is first aspirated, and then from 10 to 100 minims of pure carbolic acid is injected. Sometimes a simple tapping between the third and eighth day after injection is necessary. The treatment of varicocele is accomplished by subcutaneous ligature. The final chapter is devoted to maladies involving the genital function.

This is an admirable book, destined to be received with as great if not greater favor than its well known predecessors.

Correspondence.

LONDON LETTER.

By George F. Still, M.A., M.D., F.R.C.P.

The month which is drawing to its close has not been lacking in matters of medical interest. Perhaps the most prominent has been the outbreak of typhoid fever on board one of the training ships near London, which may be only the first of many and widely scattered outbreaks, inasmuch as it has been traced with certainty to blankets returned from South Africa after use by the military authorities in the late war, and these blankets have been sold at cheap rates to firms and institutions all over the country. It is said that the typhoid bacillus was obtained from about three-fourths of the blankets examined, and if it be true that many of those which have been traced and seized in various parts of the country were in a filthy state, with stains of blood and food upon them, as well as the less obvious bacterial contamination, the severe reproaches which some of the daily papers seem inclined to heap upon the authorities who are responsible would seem to have some justification. If the statement be confirmed that all these blankets were disinfected by the military authorities before they were allowed to be sold, it will be interesting to hear what was supposed to constitute disinfection. The outbreak will, at any rate, draw attention to the need for careful sterilization of bedding after use for typhoid patients, and such a reminder is evidently necessary.

Of more than passing interest also was

Mr. Jonathan Hutchinson's account of his recent researches on leprosy in India, which he described at a meeting at the Postgraduate Polyclinic a few days ago, Lord George Hamilton, the Secretary of State for India, being in the chair.

As is of course well known, Mr. Hutchinson has for some years been deeply imbued with the idea that leprosy is the result of eating badly preserved fish. It is not, he says, the fish itself, nor an excessive use of fish, but the swallowing of some specific virus present in such imperfectly preserved fish which determines the occurrence of the disease. Mere decomposition of food is not enough to account for the disease; the Kaffirs in Natal have long eaten meat in a state of advanced decomposition, but leprosy was unknown among them until the eating of salted fish was introduced from Cape Colony. During his tour in India he found that although a certain number of lepers could not be shown to have eaten fish at any time, this number was much smaller than some objectors had affirmed, and he instanced two districts which, being inland and being very hot districts, were said to be almost entirely innocent of fish diet, although they both contained a large number of lepers. On investigation this proved to be incorrect; in both there was not only a plenty of fish, but it was actually a principal article of diet, and many of the lepers there admitted having eaten much fish. The fish moreover is preserved by salting, which is very imperfectly carried out owing to the heavy salt tax. In some parts Mr. Hutchinson was actually informed that the state of the fish when eaten was such that Englishmen would not think of eating it. In answer to the objection that leprosy frequently occurs where at any rate the patient denies having eaten fish, he pointed out that such a denial may even be quite honest and yet not correct; the preserved fish is sometimes prepared in such a way that it is difficult to recognize as fish at all. The difficulty also of scientific inquiry is great, owing to the many different languages spoken, so that when a native was asked if he had eaten salt fish he sometimes said "No," meaning that he had eaten no sea fish, whereas the inquirer meant fish of any sort salted. A third source of fallacy is the Hindu sentiment with regard to fish which made any such inquiry much resemble questioning a patient in England whether he was in the habit of drinking spirits, a question which as we all know draws a negative reply far oftener than the facts would warrant. But Mr. Hutchinson admitted that in a certain proportion of cases he could obtain no evidence that the patient had ever eaten imperfectly preserved fish; this, however, he does not consider an unsurmountable difficulty, as it is, he says, well recognized now that what he calls "commensal" communication may occur. On this supposition these patients may have been infected by taking food which had been handled by lepers, and he mentioned the case of a baker at Lahore, who was following his trade while leprous sores were well marked upon his hands, an obvious source of disease to those who ate the bread which he made. Mr. Hutchinson as a result of his travels was convinced that there was no part of India in which the fish hypothesis was untenable.

It goes without saying that any view held so strongly by so distinguished an observer as Mr. Jonathan Hutchinson calls for very careful consideration, and is not to be discarded lightly; but it is clear that at present this view has not gained general acceptance.

Points of some practical importance were raised recently at the Pathological Society by Mr. A. H. Cheatle in connection with quinine deafness and its prevention. The deafness due to large doses of quinine seems to be permanent and hitherto incurable, and in view of such a serious possibility the dosage and duration of treatment with quinine ought to be reduced as far as possible; in malarial districts especially both patients and doctors need to be warned of this danger. Mr. Cheatle recommended that when quinine is required in considerable doses, hydrobromic acid should be given with it, as having some tendency to prevent the deafness. This harmful result of quinine seems most apt to occur in people whose hearing is already defective. There was a difference of opinion as to the cause of the deafness. One speaker held that it was due to anemia produced by quin-

ine, while another held that it was due to congestion. The only treatment other than prophylaxis suggested was the administration of nitrites, which Dr. Milligan thought valuable.

Chorea in pregnancy was the subject of a valuable paper at the Medical Society. The paper was based on forty attacks of chorea in thirty-seven women. In eighteen of these the chorea occurred in the first pregnancy; in ten the chorea did not occur until later pregnancies; in six cases there was recurrence in subsequent pregnancies. Sixteen out of the thirty-seven women had shown some rheumatic manifestation previously. The commonest time of onset of the chorea was the fourth or fifth month of pregnancy. Five out of the forty attacks proved fatal; in two of these fatal cases abortion was induced, and in two others there had been spontaneous abortion. As a result of this experience Dr. Wall and Dr. Andrews, the authors of the paper, were opposed to the induction of premature labor as a method of treatment, and in this were supported by Dr. Herman, who said it neither cured the disease nor made the progress any less unfavorable; but Dr. Routh thought that it was sometimes of value, and that its chief disadvantage was that it introduced a danger of sepsis, to which such patients seemed specially liable. With regard to drugs in this condition, the openers of the discussion were much opposed to the use of opium or bromides; they considered arsenic the most useful drug. Another speaker advocated the use of chloral.

The value of adrenalin in ophthalmic operations has just been under consideration at the Ophthalmological Society. It is sometimes mixed with cocaine or eserine; its value is chiefly in limiting the amount of hemorrhage. It was pointed out, however, that it had certain distinct disadvantages; in glaucoma it sometimes produced an increase of tension in the eye, and actually caused hemorrhage; in cases of scleritis and episcleritis similarly it sometimes excited pain, and increased ocular tension; it is moreover by no means uniform in its effects.

At the same meeting a very interesting experimental observation was brought forward by Drs. Paine and Poynton, whose names are well known in connection with the bacteriology of rheumatism. By inoculating the eye of a rabbit with the diplococcus which they have isolated in many cases of acute rheumatism, they produced an iritis, and were able thus to demonstrate the microörganism *in situ*. In the human being it must always be difficult to demonstrate the diplococcus in cases of rheumatic iritis, for even if fluid could be obtained from the anterior chamber the microörganism would probably not be found inasmuch as it develops rather in cells and tissue than in exudates.

Professor Schäfer has reported this week the results of an inquiry into the phenomena attending death from drowning and the means of promoting resuscitation in the apparently drowned. Experiments were first made with the human cadaver, and it was found that rigor mortis interfered with the movements of the chest so much that no reliable results could be obtained. A living subject was then used, men being trained to take a series of deep respirations and so render themselves temporarily apneic, and also to keep the glottis open so as not to prevent the free passage of air into or out of the lungs. The various methods of artificial respiration—*e.g.*, Sylvester's, Howard's, and the Marshall Hall method—were tested on the living subject thus, and it was found that all of them were competent to effect sufficient exchange of air to maintain the oxygenation of the blood. But the one which gave the best results was that known as the rolling method—*i.e.*, rolling the subject alternately from the lateral or laterosupine to the prone position, with alternating pressure upon the back of the thorax. Some interesting facts were also elicited by experiments on dogs; when these were drowned in fresh water it was found that a large portion of the fluid drawn into the lungs was rapidly absorbed, and evidently passed into the blood, whereas when the animal was drowned in salt water, very little absorption from the lungs took place. It is remarkable how long immersion might last without a fatal result; in one case the animal was immersed nearly eight minutes, and yet recovered with artificial respiration.